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OF THE

ASIATIC SOCIETY

OF

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NEW SERIES.

"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia* will commit their observations to writing, and send them to the Asiatic Society in Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease."—Sir Wm. Jones.

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JOURNAL

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ASIATIC SOCIETY.

Journal of a Mission from the Supreme Government of India to the Court of Siam.—By Dr. Richardson.[1]

January 22nd.—Long-song-noi, 4h. 50m., fifteen miles. Left Fata-kan, and proceed in a south-west direction along the level towards the hills near the foot of which the path lies till 9h. 35m. when we ascend a rocky hill, and cross a small stream; pass a large Kareen village, which seems a permanent residence of a portion of that wandering tribe; their houses were large, their dress better, and the women were seated in the house more clean and neat in their person than usual; they were the first Kareens we had seen whose forefathers had been inhabitants of this part of the country. The village which was surrounded by high, abrupt rocky hills, consisted of seven or eight houses, with their betel vines and jack fruit trees close round the houses; from this we descend in a ravine till 11h. 25m. where we cross a second run of water; from this the country is more open (the valley of the May-nam-noi may be three miles across) and rocky, the trees small and stunted, with little or no foliage, affording no shade from the sun; the latter part of the march was excessively hot. At 12h. 15m. we crossed the small dry bed of a stream forming the boundary between Tata-kan and Long-tsong; these towns, if they may be

[1] Continued from p. 1036, vol. viii.

dignified with the name, have only lately had any territory assigned them, as the province of Dayiek formerly reached from the Pon river, near Takanom, north, to a stream near Camboorie, and form the district of Dwong-ka-dhot, or Moimg-Ontai, east, to the three pagodas on the Tavoy frontier, west. At 12h. 25m. pass a third small stream of water, and at 1h. 20m. halt here on the banks of another, in which the water is standing in small pools in the deepest parts of the bed, with an underground current through the sand. We are not more than two miles from Long-tsong stockade, but to allow the elephants to come up with day-light we were obliged to halt here. The path to-day has upon the whole been good for a hill country, and the water scarce, taking the same circumstance into consideration; but as this is the most precipitous side of the hills the larger portion of the water probably finds its way by the Tenasserim river into the Bay of Bengal. The number of Kareens who pay tribute through Camboorie, mentioned yesterday, is, as I suppose, exaggerated, Dayiek and Taung-ka-paung being the places; Mung-keik's (present chief of the Talines in Siam) father took up his abode on coming over from the Birmans, though the largest number of that people dependant on them have only about 100 each; Tatakan has only thirty, and Pra-sao-one seventy; the average of these two would give fifty for the smaller towns, or a total of about 550. Nine Kareens and fifteen Talines are free from tax, as garrison, if I may call them so, of each of the frontier posts along the river, but they have in lieu to furnish guides and provisions to public officers passing through the country. The elephants came up at 6h. 10m. and it was dark before the tent was pitched.

January 23*rd.*—4h. 10m., thirteen miles. Start at 8 A. M., and at 8h. 50m. pass the road leading to Long-tsong, about a mile from the river on which that post is situated; from hence we had a cart road throughout the rest of the day, the jungle thin, the trees stunted and scanty of foliage, the country sterile or covered with strong rank grass, the sandstone work protruding through the surface at intervals, without other mark of cultivation or sign of inhabitants, except the good level cart road by which we travelled. 9h. We pass the stream of Long-tsong with

a run of water ancle-deep, soon after which we saw the first sapan wood, the tree much resembling the Caouchouc tree in leaf and appearance, and seldom reaching here (the N. W. limits of its growth) a greater size than the thickest part of a man's arm. Our route lay occasionally near the eastern and occasionally near the western range of hills. At 11h. 45m. we pass another small stream (the May-ta-pan) in a sort of ravine, and at 12h. 30m. halt opposite Moung-tseing (Lion's town) a ruined stockade on the eastern or north-eastern side of the river. I find the Taline garrison in these stockades are more military than I supposed them; they are not employed in collecting the duties which are taken by the Kareens to Camboorie. The chief of Moung-tseing receives sixty tickels a year from the king, and fifty men are detailed for the duty of this post, but as there is no muster roll forwarded to head quarters, those who choose to remain with their families by paying twenty tickals to the Myotsa are allowed to do so; a small part only of the detachment find their way to the frontiers; at this part the force is larger than usual, there are now fifteen men present, and the Myotsa is at Bankok with a party of five. He (the Myotsa) also levies an annual tax of ten pieces on each man, the king's people excepted, who cut sapan wood in his jurisdiction. Their period of service on the frontier is six months; they say they are allowed to bring their families, but do not do so on account of the malaria, intermittent prevailing here in May and October. Here also they are all Talines from the province of Martaban. A part of their duty is to carry the provisions which are sent up by the king to the gold washers on the Belank, of whom I am here informed there were last year 1500 employed, besides 60 men of the Myotsa of Dayiek or May-nam-noi.

January 24th.—3h. 30m., 11 miles. At 8 left the modern post Moung-tseing, and in 11 minutes reach the crossing of the river, which here runs east. Crossing in three small boats occupied us 30 minutes, and in 20 minutes more reach the walls of the old city of Moung-tseing (or Lion's city) which must have been long deserted; the walls though well defined, are, as well as the whole interior of the place, quite overgrown

with lofty forest trees; it had the form of a square, of a mile in extent on each face, with a large tank and interior town. The people who accompanied us had no traditions respecting it, except that in former days gold and silver were very plentiful here. 15 minutes more brought us out at the river face, from which it is distant a few yards. An hour after leaving the town we met a party of two Siamese and three Talines, with an order from the Myo-won of Camboorie to the Tseetkay of Moung-tseing to accompany us to Camboorie; as we were however some miles from him he escaped the duty. So difficult is it to get, or so careless are the people in giving information to be depended on, that one of the two Shans told us they left Camboorie yesterday before daylight, and the other at 11 in the forenoon. At 11h. 15m. pass the small town of Moung-khiet, probably deserted about the same time as Moung-tseing; the interior was a perfect level, covered with a long even grass, and high forest trees wide apart from each other, and without underwood, giving it the appearance of a park. At 12h. 40m. halt here by a small puddle of stinking green water, the only water except the river which we left at Moung-tseing we have seen this march, and the Siamese declare there is no other halting place for nearly as far as we have come. We have had a good, perfectly level cart road, though the plain has never been more than four miles across (from information); the soil seems fertile, and capable of affording subsistence to a large population; but with exception of the posts on the river, the country appears destitute of inhabitants, there being only one or two Kareen villages of two or three houses, in the district of Moung-tseing. The See-sa-wat which joins this river at Camboorie is said to have fewer inhabitants than even this, and the intermediate country is a wilderness. We have been much exposed to the sun to-day, which is very powerful, our halting place a perfect level, open, and covered with short grass; the people sleeping about in groups is exceedingly picturesque by the clear moonlight. We have seen to-day hares, partridges, and pea-fowls, and wild dogs are said to be numerous here, larger, with longer hair than the common dog. but

equally varying in colour. Buffaloes, bison, and wild cows have long disappeared, but deer and wild hog are still plentiful.

January 25th.—Camboorie, 5h. 20m., fifteen miles. Thermr. 6 A. M. 66°, Noon 90°. Notwithstanding the repeated assurance of our old Siamese guide, (hitherto they have been Talines,) that the vile water we were drinking was the only water within many miles, the elephant people, when looking for their elephants this morning came on a beautiful stream within 100 yards of us, just when it was too late to be of any use to us. We started at 8 A. M. and marching along a dead level plain, averaging from two or three to six miles in breadth, thinly covered with low trees, very little underwood, with strong crop of coarse grass, the soil apparently good, reached in an hour another stream of water a little N. W. of the road; the march was of one uniform character throughout, and at no great distance from the See-sa-wat river, between which and the road runs a low range of hills, and another of greater altitude, and more rugged and abrupt, between us and the Maynam-noi; at 10h. 30m. passed another small run of water springing out of some rocks in the plain, the water of which is soft and unpleasant. Here we halted half an hour; from this the grass is shorter, but still rank and coarse. At 12h. 45m. we saw the first paddy fields since leaving Maulmain, near which we march till 1h. 25m. when we enter a plantation of cotton, (which was high and flourishing) plantain, and tobacco, close to the See-sa-wat, which we should have known to belong to Chinese, even had we not seen them at work in the fields, so incomparably superior are they in all their operations, agricultural or mechanical, to the indolent slovenly natives of Indo-China. Along this our route lay till 1h. 50m. when we crossed the See-sa-wat, about three and a half or four feet at the deepest, but of considerable width, perhaps 160 paces wide; after waiting an hour at a shed, about thirty feet wide and forty-eight long, enclosed by a palasade of bamboos close to, and partly in the river, and no notice being taken of us, I sent the Siamese interpreter and writer to announce my arrival, and purpose of my visit to the Myo-won, and request an interview tomorrow. The great man was as usual reported to be asleep,

but his writer promised to let him know when he awoke; and almost as soon as my people, the writer made his appearance with a present of ten or twelve trays of fruit, and a civil speech; a few minutes after he had taken his departure, he returned again with three or four trays of sweetmeats and oranges, sent by the Myo-won, with a civil message, and a request to be excused seeing me to-morrow; I however repeated my request of an interview to-morrow, being hurried from delays on the road hither, and have not heard his answer; in the meantime, as usual, the people are not allowed to go out, and two people accompanied my grass cutter when he went for grass. I am told we are still five days from Bankok, and that it is impossible to take on the elephants by a shorter route than twenty days, up the west side of the Nakoutchathee* river and down the east, the small nullahs being under the influence of the tide, and the mud consequently deep. My informant is the Myotsa of Taung-ka-paung, a wily old Taline, who came here in the great rising of 1876, (1816. A. D.)

January 26th.—Camboorie. About 10 o'clock the Myo-won's writer came out to say, the Won would be glad to see me in the afternoon, as he was engaged now listening to the instructions of some Poonghees of great sanctity, who live the greater part of the year in the jungle, sleeping under trees, with no fear of wild beasts. He inquired what I was in the habit of eating, as he wished to give me an entertainment; I told him I was obliged by his kind intentions, but as I never eat but twice a day begged him not to take any trouble on that account. I had found this the best plea for not partaking of their unsavory kindness, as abstinence is considered meritorious, and eating only twice a day quite a virtue. At a little after 1h. the same person came to say the Myo-won was prepared to receive me, I accordingly rode in taking with me a double barrelled gun, a flask or two of powder, some caps, and a small carpet. On arrival at a zayat on the bank of the river, ten minutes walk from my tent, I found all the officers of the town assembled, one of whom met

* My informant did not appear to know, or at all events did not give us to understand, that this river was a branch of the May-nam.

me at the door, and pointed out my seat, a chair on one side of the entrance, and the place for some of my people on the floor immediately in front of me. The Won came in about five minutes, and seated himself on a sort of platform at the other end of the room or shed, which might be fifty feet long by twenty-five broad; his officers were in front of him, crouched on their elbows. He asked the usual questions, when I left Maulmain, the state of the road, how I had been treated and furnished with provisions, &c. &c. I inquired when he heard from Bankok, the health of the king, state of the country, war with Cochin-China, his own health, &c. &c. and after some time I asked him about the convicts escaped from the jail at Tavoy; he said there had twelve arrived some time ago, two of whom had died; six others had been sent from May-nam-noi and arrived the day before yesterday; the ten remaining of the first arrival, were now in irons in jail; the others were not yet confined, but should be immediately. I had yesterday heard (our people who came in the boats saw them) that the officers for Maulmain and Tavoy had left this the day before yesterday, and the Myo-won now confirmed this intelligence. I had expressed my anxiety to see them, and get them to take charge of these prisoners, to the Myotsa of May-nam-noi, and have no doubt the boatmen mentioning this, was the reason of their starting without seeing me, as they would naturally otherwise have wished to do; I however still urged him to send these men back with them. After much conversation, in which I pointed out to him the article in the treaty on the subject, he refused to send them back without an order from the ministers; as he declined giving them up, I requested he would not allow them to escape, as I should repeat the request at Bankok; he said they were all in irons except the last six; if I did not believe him, I might go and see them. I of course assured him I had implicit confidence in his word; at this juncture about 30 unfortunate Cochin-Chinese prisoners were marched in, of whom there were 3000 at Camboorie; I afterwards heard there were near 1000, probably 300 may be nearer the truth; he said six of these men had made their escape, and begged me to apprehend and send

them back, if I should see them at Maulmain. I told him the people he mentioned I had seen at Maulmain, and on their arrival had assisted them; that he quite mistook the ground on which I demanded these natives of India; that they were felons, condemned to imprisonment for life for murders of the most aggravated kind, which I explained to him, and warned him of their character. After some conversation on the Cochin-Chinese war, he ordered in two or three and twenty small dishes of sweetmeats, roast pork, roast fowls, and soup, all apparently Chinese cooking, of most uninviting appearance, for myself, and different trays for all the people, who did more honour to his hospitality than I could. He then pressed me to stop here for four or five days, as he said was the custom; I however declined remaining more than one day more, and am to start on the 28th. I had by a great deal of inquiry amongst the Talines here learned that there is a good and much frequented road, as was to be expected, from this to Bankok, by Nongkaw, in six days; and when the subject of my route was discussed, as all matters are here, I intimated my intention of going by that route, without allusion to the attempt made to deceive me yesterday. I spoke of the goodness of the road with such confidence, that no attempt was made to dispute the fact now, but a wish expressed that I should go by boats, or if by land even, that I must go to Rajapore or Pra-pree. This I also objected to doing, as it is considerably out of the direct course to Bankok; that I had no business with the Myo-won of Rajapore or Pra-pree; and had here waited on him, the Myo-won of Camboorie, and stated the only object of my visit; he said they had no wish to put any restraint on me; that I might go by any road I felt inclined, but the Myo-won of Pra-pree had made preparations to receive me, and would be disappointed if I did not visit him. The subject was then dropped, and I took my leave, near three o'clock; the sweetmeats, &c. were sent after me to the tent, and about nine in the evening the Taung-ka-paung Myotsa came to press again on me the necessity of going by Pra-pree; I again declined going by that route, as my business lay at Bankok with the ministers; it was decidedly out of my way, and when I got there, how was I to be assured the Myo-won of Pra-

pree would not send me off to some other place; I acknowledged their kindness in wishing to entertain me, and requested him to tell the Myo-won that I preferred going by the route I had mentioned; he promised to do so, staid till near 11 o'clock P.M. and took his departure. I had a visit also from the second officer of the town, who being ill only stayed a few minutes. On the whole they have been civil and attentive; I cannot however make out the motive of the officers en route to Maulmain avoiding me (which they certainly have pointedly done, unless to avoid refusing to take back the Thugs) as it might have influenced their reception there. The Myo-won here receives from the royal bounty 600 tickels a year, besides youm fees.

January 27th.—Received from the Myo-won this morning a present of fruit, &c., and had a long discussion with his writer about the road; they appear determined to take me round by Pra-pree, at the same time to avoid the appearance of constraint. After dinner I called on the Myo-won, according to my proposal of yesterday; he met me at the zayat where I had seen him yesterday, and taking my hand led me to his house just inside the fort. After a good deal of conversation on different subjects, I remonstrated strongly against going round by Rajapore, as I had no business whatever with the chief of that town. I reminded him that the purpose of my mission having last year been intimated to the court, that he himself had been instructed not to detain me (of this I had no doubt); I told him I had already exceeded by many days the time I expected to be in Bankok, and further delay would render it doubtful whether I should be able to return till after the monsoon, &c. &c. &c. I naturally anticipate a stay of some time in the capital, and fear I shall not be able to get down any number of cattle before the rains, as the route from Bankok to Zimmay, should I be allowed to proceed there, will occupy a full month. An attempt was made to convict me of having said I would go by Rajapore, and the Myo-won said he had written before my arrival to the chief of that town that I would visit him. I said I did not see in what way the ends of my mission were to be forwarded by the detour, nor that he should have written without my concurrence to the effect he men-

tioned; requested him to consider whether he was doing right in endeavouring to place restraints on me, which we never attempted with Siamese officers' convoy to our provinces. I told him unless I was positively prevented going by Nougkan I should take that route; after a great deal of argument I have been obliged to go by the route they wished. With the exception of this dragging me some days out of my way, my reception here has been on the whole very friendly, though the Myo-won's manner was constrained, and the old writer, whom I suspect is the principal obstacle to going direct to Bankok, prompted him. We have been plentifully supplied with provisions, and since my first visit to the Myo-won the people have been allowed to move freely about. I repeated the application for the convicts, and mentioned that a sum of 15 rupees each would be paid to cover their expenses on their delivery at Tavoy; he again declined giving them up, as I was going to Bankok, without an order from thence. I applied for a boat, which was furnished, and by putting the heaviest of the things in it, we shall be enabled to make longer marches; one or two of the people also are sick, and unable to proceed by land. A number of dishes of meat and sweetmeats were again served to me, and the people who accompanied me; and after remaining an hour and a half I returned home, where the Youkabat (or Nakan) soon followed me with twenty-four dancers and musicians, whom he told me were all of his own household; amongst whom there were eight unfortunate women, Cochin-Chinese prisoners, of whose wretchedness and destitution I have heard a good deal to-day; they remained dancing and singing in the clear moonlight night in front of the Tay till eleven o'clock, when I gave each of the performers a rupee, with which they were apparently well satisfied. Their song was all to one air; though the voices frequently did not keep time, it was rather pleasing; the dancing, if it could so be called, was any thing but graceful; the words sometimes Cochin-Chinese, sometimes Siamese. The town of Camboorie is situated opposite the junction of the See-sa-wat and May-man-noi rivers, principally along the bank of the former; it is a long, straggling place, consisting of one long street along the banks of the river,

containing in all 300 houses, and there may be 200 more in the small streets running off, and in the fort. The See-sa-wat is here 150 paces, perhaps 250 feet wide, and 3½ feet deep; from the water at its present height, to the point it reaches in the rains, is nearly the same distance as the width of the stream. There are lying here about 122 boats, of which thirty-eight are canoes, the others are boats of considerable size. A brick fort has lately been built here, of about 500 paces long by 300 broad, without defences, unless two semi-lunar breastworks outside on the river face, with five old guns each, may be so called; the wall appears about sixteen or eighteen feet high, and there are said to be twenty guns within the fort; three gates on each side, and one at each end; there is no bazar in the town, but a few stalls on the single bed of the river, where the Chinese have a gambling shop, and where salted eggs and gnapee are sold in small quantities. Upon the whole it is rather a paltry place, considering the importance attached to it by the Burmans, and that it is within six days of the capital. Many of the Cochin-Chinese who can speak Siamese, have been questioning our people as to the possibility of reaching Maulmain, and the Talines are equally anxious that some means for their deliverance could be arranged; I have however checked all idea that my visit was connected with such an object.

January 28th.—Small green pool, S. 36 E. 4h. 40m., fifteen miles. Started at 9h. 15m. having been detained about half an hour for the boat, and in giving a list of the things to be put into it; ten minutes brought us to the end of the village or city, and travelling along near the bank of the Camboorie river, formed by the junction of the May-nam-noi and See-sa-wat, we passed several large plantations of tobacco, and one or two small fields of sugar cane, cultivated by the Chinese; at 10h. 55m., cross the smaller branch of the river, about half-leg deep, and passed along a sandy island, with a kind of short willow on it; cross the larger branch by a boat, this however though rather rapid is of no great depth; just after crossing the river, we pass two small villages, since which we have seen no sign of inhabitants. The road has been level throughout, and well

travelled, jungle thin, water very scarce, and at this halting place it is green and bad; our party has been increased at the little villages we passed in the morning, and we are now accompanied by thirty men who bivouac at a little distance, but do not however interfere with our arrangements. On starting this morning, some of the Myo-won's people met us with a few baskets of rice and some meat opposite the gate of the town.

January 29th.—Bausong-roy, 4h. 20m., fourteen miles. Started this morning at 8h. 50m., and marching along a level road, through a thin jungle with long grass, a great deal of which had however been burned, we passed one old plantation of cotton and plantains, the cotton of a kind I have not seen before, being now ready to gather; the crop was small and scanty, but the plants are now two or three years old, the cotton fine and soft, but rather short in the staple. We are now fairly in the alluvial plain at the head of the gulf; saw only one or two small rocky hills to the westward; the water has been scarcer and worse than yesterday, and we were nearly missing this, which is a swamp, as it lies a little off the road, and the people of the few houses near it, who are Talines, or Laos prisoners from Wiang-tchong took fright at our appearance, taking us for Siamese or Taline small officers. It appears that at stated periods, the Talines are branded on the arm, as belonging to the right or left wing of the army, and their name, number, and officer's company to which they belong, entered in the muster roll of Talines, from which time they are liable to all calls for public duty, those only who have entered the priesthood are excepted; and such as can escape, by concealing themselves, till the impress is over, do so. One old woman in her joy to find who we were, abused the government of the country roundly (though several Siamese of our thirty conductors were present); she said the Siamese, bad as they were, were not so bad as the low Talines who form the officers in army; she said scarce a day passed without tears for the old country; now it was quiet she prayed daily that her next transmigration might be a bird to return there, as she had no hopes now of doing so in this life. There are now about 5000 Talines, 1500 of whom receive royal pay, such as it is; some as little as three

or four tickels a year; all who have reached the height of two cubits and a span, are branded, and they are numerous, as there has been no impress for three years.

January 30th.—Rajapore, 6h. Eighteen miles. Started this morning at 7h. 45m. and in twenty minutes passed through the clearing in which we pitched our little camp last night; from this, till 9h. 35m. our route lay through a jungle, of the same scanty stunted trees as we have had for the last few days, the soil poor and sandy; at 9h. 35m. pass a village of 15 or 20 houses, and enter a plain covered with long reedy grass, near which we saw the first black cattle we have met with in the route; at 9h. 55m. came on the banks of the Song-roy river, here about sixty feet wide, and apparently not more than ancle-deep, with the tide coming in; and immediately after coming on the river pass a large village, with a number of Chinamen about it. Here the plain is about three and a half or four miles across, from east to west, with the range of hills to westward, (along which our route has been throughout at no great distance,) running round to a few points east of south, broken and irregular, and the highest probably not more than 6 or 700 feet; we march along the Song-roy till a little after eleven, when it tends away east, to join the Camboorie river; the plain increases a little in breadth, and contains three or four small shallow lagoons, all along the borders of which the people, principally prisoners from Wiang-tchong, were employed in planting out paddy. They have a mode of irrigation here, I have not seen used except in China, by means of a long spoon-shaped light trough, with a long bamboo handle, slung in a high triangle of bamboos, the person using which stands on a slight frame raised in the water, and with a spoon in each hand, by means of the slings, throws the water into the channel for conducting it over the fields to a height of about three or four feet. At 11h. 25m. we passed the village of Song-roy of 20 houses, generally of very miserable description; from this, our route lay S. 31 E. to the town; the swampy nature of the ground in one place, and a detour round one or two of the small lakes, kept us till two o'clock before we reached it. The boats must have been manned and waiting for us on the town side of the

river, for there started to meet us the moment we halted on the opposite bank, four handsome large boats with platform in the middle, covered with a high roof on four very high posts; in mine there was a carpet and pillow. We pulled rapidly down the river, about a quarter of a mile, and landed at a neat, well finished (I may call it) house, with two wharfs run out into the river, which ran a few feet from the doors; here I found the Myo-won's brother, the Tseetkay, Nakans, and some other officers of the town, waiting to receive me, seated at the edge of the raised centre of the house; there were one or two small China tables and chairs, two or three Calcutta made chairs; and a large old Dutch looking high backed ornamented heavy one in the centre of the room, on which I was requested to be seated. Conversation was confined to a very few questions, when a party with at least twenty trays of fruits, vegetables, and sweetmeats, from the Myo-won, was presented by his brother. The people and my servants were requested not to cook any thing, as every thing ready dressed would be supplied us, and in a few minutes my dinner was brought in, consisting of rice, roast pork, fowls, ducks, and soup, curries of three or four kinds, and some stews; as the curries were not the most inviting, I smuggled my own curry on the table, and managed to make my dinner, after which the people were served in an equally plentiful manner. Two officers (writers), were appointed to attend to all my wishes, a band of eight singers and musicians came by the Myo-won's order to amuse me for an hour and a half, all very well dressed, who remained till 10 o'clock P. M. when our watch was set, and quiet obtained for the night. The music was much less soft and pleasing than that I have been accustomed to hear in Laos, called Siamese. By some accident one of the horses was drowned in crossing the river to-day, he had in the last few years travelled with me upwards of two thousand miles, in the course of which he had repeatedly crossed rivers of much greater width. The Myo-won sent several messages expressive of his sorrow of the accident, and an offer of two or three horses to replace him.

January 31*st*.—This morning the Myo-won sent a plentiful breakfast for my whole party, and at noon, just as I was preparing to take an altitude of the sun, a number of officers came to say he was waiting to receive me; I accompanied them, taking with me two fuzils, a flask of powder, two small carpets, and a piece of Bengal handkerchief. I found a chair placed for me in the centre of the room, the Myo-won seated with a mat and richly embroidered pillow on a sort of wooden couch, at the end of the room, his officers lying before him on the floor, which was covered with small carpets; the room had been ornamented by a Chinese or Siamese artist with beautiful yellow grass, brown trees, green rocks, and blue cows, with houses stuck here and there in most extraordinary perspective on the rocks, and a ship and one or two junks full sail amongst the trees. Some small old fashioned English prints, China lamps and lanterns, with some spears and muskets, completed the furniture and ornaments of the hall, which was about the size of the house erected for me The conversation was exceedingly constrained, no one joining except the Myo-won and myself; the subject talked of, was of course the object of my mission, which I told him was to convey to the ministers of his Majesty the king of Siam, the assurance of the high esteem and friendship in which they were held by the ministers of the great ruler of India, to increase and strengthen the friendship between the two countries, and an invitation on my part to his people to be more frequent in their visits to Maulmain, which was now a large and flourishing country. He begged me to be perfectly at home, and said there was no restraint on the people with me, who might go where they pleased, &c. &c. &c. I asked him regarding the route, and intimated my intention to go by land, as I had already been delayed longer than I anticipated on leaving Maulmain; he wished me for my own ease and comfort to go by water, and further urged the impassible state of the road; I expressed my disinclination to do so, as confinement in a boat affected my health; he said he would send word to the Myo-won of Nakoutchathee that he might be prepared to expect me, and the matter seemed settled. I remained about an hour and a half. The interview

was I think more stiff and constrained than I have had with any of the numerous native chiefs I have visited in this country. Soon after my return, his brother brought about thirty or forty large trays of sweetmeats, and twelve or fourteen men loaded with cocoanuts, jacks, and other fruits. I begged him to convey my thanks to the Myo-won for his attention and hospitality, and a request that the guides might be ready early to-morrow, as I wished to start in the cool of the morning. The objections to the land route were again raised, and as the only reason assigned was that the Myo-won had written to the Myo-won of May-klong that I would come that way, but that of course if I wished to go by land, I should not be prevented; as I do not know in what way I may be obliged to travel into Laos, I particularly wish to avoid being parted from my elephants, as the state of the roads may be made an excuse for detaining them, and their absence be pleaded at Bankok as a bar to going up the country at the season when the water is at the lowest; and as I believe one object of some importance will be gained by breaking down the ridiculous restriction to our intercourse with this people, I assured him I asked for nothing we did not readily accord to others; and drew his attention to the perfect freedom from restraint of their officers at Tavoy and Maulmain, and repeated my wish to go by land; pointed out to him that we were here to the south of Bankok, and should now have to return N. E. whereas had I been allowed to proceed, which I wished to do directly, across the country from Camboorie, and which any other person going to Bankok would have done, I should by to-morrow have reached that city, &c., though making the acquaintance of the Myo-won of Pra-pree had rewarded me for coming so far out of my way; but I now wished to take the nearest route. He said he would take his brother's orders, and went into the town for that purpose. I requested him to say, as curiosity was not my motive, if the Myo-won would say he did not wish me to see that part of the country, I would go by any route he pleased. As he had not returned at 11 o'clock I told the mahouts to get the elephants early in the morning to start by land, as I had agreed with the Myo-won personally in the forenoon. The town of Rajapore, or as it is commonly called, Pra-pree, is of very

considerable size, though I have been unable to obtain any accurate information as to the number of people it contains, from the excessive jealousy of the people on such subjects; and from its extent, have not been able to count the number of houses, as was roughly done at Camboorie. The greater number of the inhabitants, as in that town, live about the banks of the river, outside the fort, which has a brick wall of about eighteen feet high, with an open parapet and ravelin at each corner, two doors in the long faces, and one at the ends; it stands east and west along the banks of the river, which here runs to the eastward a distance of a few hundred paces, it is about 300 paces broad, and 7 or 800 long, with a large portion of the ground waste inside; there were about 200 or 280 boats in the river of a large size; the river is fordable a short way above the town at low water, and the tide does not rise more than four feet opposite the town at spring tides. I am told the Myo-won receives from the king 600 tickels a year, and has the law fees and presents besides. I do not believe, from all I have heard, that any of the chiefs of towns receive so large a sum.

February 1*st*.—Bankiew, 4h. 50m., fifteen miles. Sent the mahouts for the elephants at day-light; they found them, contrary to the promise of the people sent by the Myo-won to take charge of them, tied up close to the town. When preparing to start, a message was brought from the Myo-won to request me not to hurry off, as breakfast was preparing for our party, to which I returned an acknowledgment of his kindness, and intimation of my readiness to wait. The interval was employed by me in dispatching two boats I had been furnished with for the sick and some of the royal presents, and by them in again urging me to go by the river, now on the Myo-won's account, as the Myo-won of Camboorie would obtain credit with the king for having prevailed on me to come here, whilst he could not get me to go to May-klong; they disclaimed any wish to prevent my seeing that part of the country; I said I did not think personal motives should have weight with us, that I did not consult my own personal ease in labouring over the hot plains, but that I had been sent by a great government to the

ministers at Bankok, and that I wished to make the greatest possible dispatch to where I was ordered, and should have done so from Camboorie had I not been prevented; and when I had seen the ministers, I should be happy to comply with their desire in visiting any towns they might wish. The breakfast was brought in and discussed, and we started; the guides were fortunately not ready. We were conducted along the west and south faces of the fort, and whilst halting for the guides at a small zayat, half a mile from the town, met a party of labourers coming in from the paddy fields, and on inquiry found that they were just about to lead us amongst muddy nullahs and inlets from the sea, influenced by the tide, against which we had several times been warned to be on our guard by Burman and Taline refugees. The labourers had just pointed out the proper road, when the guides came up, and declared that no road existed in the direction I now proposed to go; that, that road, pointing along a road apparently leading to the salt grounds at the head of the gulf, was the only one in existence; I however took the direction pointed out to us considerably more to the northward, and inquiring of people on the road and at the villages, all of whom assured me we were on the proper road, reached this place at 3h. 35m. A few miles north of the town runs a rather deep belt of palmyra trees with common jungle, tending away a little to the northward of east, in which is the high road to Bankok, with several villages along it; also in the jungle, between this belt and the head of the gulf, a distance of about two days, is an alluvial plain, the lower edge intersected, as already stated, and forming salt fields, the upper edge cultivated to a considerable extent by the inhabitants of the villages along the road, though this plain is said to be covered with water in the rains, so that boats pass along it in all directions, but at this season is perfectly dry near the jungle, so that we had no occasion to go on to the road, which ran a mile or a mile and a half to the northward of our course. Though there was no path, we took the direction pointed out by the few people we met. We passed seven villages in the day, the largest might contain thirty or forty houses, and at the last a large herd of cattle and buffaloes, which sell here

the former at three or three and a half tickels, and the latter at seven ; the best carriage bullocks, five tickels, or six and a half Madras rupees ; the low price is of course from the absence of a demand, for they are very scarce, and indeed can be of very little use in so swampy a country with a Boodist population, though the Siamese no more than the Burmans object to eat beef, and there are not wanting people to take on themselves the sin of killing the cattle. Our guides here in no way interfered with us.

February 2nd.—Ban-ta-chang, 5h. fifteen miles (close to Bankem). One small well of brackish water formed the whole supply for our party after an excessively hot day's march ; yesterday we were not sorry to leave our last halting place, which we did at 7h. 40m. A. M. Our route has been exactly of the same character as yesterday, sometimes across the country through the paddy fields or reedy plains, sometimes along the main road, in the jungle and palmyra forest which skirted it, all along which are the villages of the cultivators, consisting of small groups of five or six houses, and the population just along the line of road is considerable. A small portion of the plain crossed to-day is under cultivation, the largest patch we crossed at 9h. 30m. with a few hundred head of cattle and buffaloes grazing about. At ten we cross a small jeel, and close to our present halting place another long one, extending some miles into the plains, and here three and a half feet deep with a muddy bed and covered with floating grass ; it did not seem influenced by the tide, and is used by the people for domestic purposes. We are still accompanied by the thirty men sent with us from Pra-pree ; they have not to-day interfered in any way, or been of the least service to us.

February 3rd—Nakoutchathee, 5h. 20m., seventeen miles four furlongs. The people who have accompanied us from Pra-pree left us last evening, (the lake being the boundary of their district) without any apparent communication with the people of this district, or stating to me their intention, and we had some difficulty in procuring a guide to-day, who would not approach this village, and returned as soon as we came in sight of it. We started at 7h. 30m. and travelled along a road of the same charac-

ter as the last two or three days, still at an average distance of about two days from the sea. Cutting across the skirts of the plain, by which we have saved a day, as it is two days by the high road from Ban-ta-chang to Nakouchathee, we crossed in the course of the day eight muddy lakes or long pools of water, with mud, weeds, and water, varying from 2 or 3 to 6 or 8 feet deep; the worst one we crossed in a small boat just capable of holding two persons; we passed also seven straggling villages, but as they were within the belt of trees, we had no opportunity of judging of their extent, except by inference, as though there was a good deal of cultivation it was perhaps less than the two previous days, the cattle and buffaloes rather more numerous. We saw two herds of perhaps 200, the others consisting of a few, say four herds of 10 or 12. I was told by our guide to-day, that the best buffaloes sell for 10 or 12 tickels, and good bullocks, about the same price, though as much as 20 tickels is sometime paid for a choice cart bullock, inferior at 6 or 7, as cattle are cheaper near Camboorie, but not abundant in any of the southern provinces. There were a few people at work in the paddy fields, but all their thrashing floors seem small, as if the cultivation in the neighbouring villages was principally for their own consumption; the largest floor we have seen is at this place, where there is a stack of paddy ready to be trodden out, which my agricultural people estimate at 1500 Burman baskets, and I was told in crossing the fields to-day that it sold at about 9 tickels for 66½ Burman baskets, but their measure seems arbitrary and uncertain. On arriving here the first person we met in the village (for it does not contain more than 200 houses) told us that the Myo-won was at the north end of it, preparing the zayat for us; and on arriving here we found by the chips and new thatch that it had been new roofed yesterday. Just as my people were going in to the Myo-won to report my arrival, the Tseetkay and town officers came out to inquire who I was, where I came from, and where I was going; though by their preparations they were certainly aware of our coming. I satisfied them on these points, and asked if the Myo-won of Pra-pree had not sent, as he had promised me he would do, to the officers here, stating the purport of my

mission, and a request to furnish me with what I might require; they said they had not heard a word of my approach before the moment of my arrival; they said it was impossible to take elephants and horses by this route to Bankok, that indeed there was no road even for foot passengers. They departed with the information they had obtained to the Myo-won, who in about an hour sent to say he would be glad to see me if I wished to call on him, and I did so before dinner. After the usual topics were discussed, he repeated with such earnestness and apparent sincerity, appealing to his age (which may be about seventy-eight) as a voucher for his veracity, that the road was impassable between this and Bankok, in fact that no road existed, that it was scarcely possible to resist conviction, particularly as I had not had time to make any private inquiries amongst the people, and had learned nothing about the road except the general assertion of all we have asked about it, that it is good and daily travelled. I was obliged to consent to his writing to the ministers, and as I had no Siamese writer, I myself wrote to Mr. Hunter—a British merchant who has resided at Bankok many years, and has often been the channel of communication with the ministers both from Singapore and Maulmain—stating the fact of my arrival here, and begging him to intimate the same to the ministers, with the reason of my not writing, and a request not to be kept longer than necessary. I much fear it will be impossible, in compliance with the terms of my instructions, to have any of the cattle in Maulmain by the beginning of May. My previous information regarding the goodness of the road has been confirmed by the people of the village and the Pounghees, who also told my people that messengers from Prapree arrived here yesterday with a communication regarding me, the nature of which I have not learned.

February 4th.—Have had communication with the people of the village to-day. I endeavoured to send some of my Taline people to a village of their countrymen on the opposite side of the river to buy fowls, and inquire about the road, but a boat was refused them, and the town officers offered to procure any thing we wanted.

February 5th.—We have received from the town provisions

for the people, and boughs for the elephants, which we are obliged to tie up at night, as there is so much paddy exposed at this season. This afternoon I had a request from the Myo-won that I would call on him, with which I immediately complied, and found that our boat had arrived at the capital during the previous night, and the ministers had sent an order to the chief here to furnish me with boats to proceed, leaving the elephants and horse. I endeavoured, without success, to take the latter, as I should want him; they made all manner of excuses; said there were no boats large enough; I should have to wait a day, as they must send down the river for one; I told them, I had seen several boats here sufficiently large; they said they were unsteady and unsafe; I replied the horse was accustomed to boating, that I had carried him 500 miles in a boat last year; they then shuffled from one objection to another. I begged them to say at once if I would be allowed to take him or not, as I had no intention to oppose their wishes, but if not positively prevented, I wished to take him with me as necessary to my comfort; though they would not pointedly refuse, they would not allow me to take him. After some conversation on matters of no interest I took my leave, and they set about preparing our boats. I this morning sent a Taline lad (the head mahout) to a village about a mile and a half down the river; the only Taline there is (with his family) employed in making bricks for the Myo-won, to whom he is a bonded debtor; he said that that was the commencement of the road to Bankok, that buffaloes, people, and elephants travel it every day; that about "a call" inland from where they were, the jungle terminated, being only a narrow strip by the river, and from thence with a glass they might see three zayats on the road at about equal distances, and from the last, from the back of the elephants, they might see the village Quankalanai (Taline king's village) on the banks of the May-nam river; that the distance was easily done in half a day by an unencumbered man; that he himself came that way a short time ago, his residence being on this side of the May-nam, in little more than half a day with a little boy of his, whom he pointed out. The family were all familiar with the road, and some of the women

made a sketch on the ground. A short way above the town is the entrance of a canal; between this branch and the main river, and on the banks of this canal the second of the three zayats before mentioned is situated; from this the road runs along its banks. If crossed at the first zayat there is another road which comes on the river May-nam above Bankok. Had I been possessed of this information yesterday I need not have lost so much time here. This is rather a large straggling village, along the banks of the river of the same name, containing about 300 houses, and ten or twelve large Pounghee houses, though there does not appear to be more than twenty priests. The houses are here small and ruinous in appearance, nearly all built of bamboos, that of the Myo-won only a little larger than the rest. He is said to receive from the king 200 tickels a year, the Tseetkay and Ngakan 100 each. The river is about 160 or 200 feet wide, with soft muddy banks, and apparently of considerable depth; the tide rises here four feet, and large masses of weeds knit together by the root, growing vigorously, some of them having a surface of sixty or eighty square feet, float up and down with the tide. On asking the old Myo-won to-day the distance from this to the sea, he said he could not tell, never having been there; I learned however that it is about two days by the river.

February 6th.—Embarked in four boats, and started for Bankok at 9 A. M. Proceeding south-easterly, passed at 9h. 30m. a small sugar factory with two mills, with high conical thatched roofs, the roofs of the boiling houses of the same material, and apparently very low, considering the large fires that were burning in them. At 9h. 55m., passed the end of the road leading across to Bankok; at 12h. 30m. halted at a small village for the people to breakfast; my servants' boat was overloaded, and did not come up till near three o'clock, when I had breakfast and dinner in one, to prevent a second halt. Started again at 3h. 45m. and continued pulling with the stream till 9 P.M, when we halted for some hours. We passed in the course of the day many small villages, almost entirely occupied by Chinese employed in the manufacture of sugar, in all eight small establishments, the largest with four mills drawn by

one or two buffaloes each for breaking the cane; the heaps of firewood opposite each seemed disproportionally large. The banks of the river are excessively low, but at the village where we halted for breakfast, on proceeding about a gunshot in land, you pass a belt of cocoanut trees, with a good deal of underwood, and come out on an extensive plain, which appeared to reach to the May-nam, quite dry at this season, and covered with paddy stubble. Here we were again assured of the existence of a road, perfectly dry and good, and the fact of an elephant (called white, but which only differed from the common ones in having a reddish coloured head) having crossed lately to Bankok.

February 7th—Started 1h. 30m. A.M. with the moon; the fog which did not clear up till 8 o'clock was so thick that nothing was to be seen. The east bank of the river, near which we kept, was of the same character as yesterday, but fewer inhabitants; indeed, I did not see a village till we reached this place. We halted at a custom house chokey from 5h. 15m. till 6 A.M. just before reaching which we passed the cross branch leading to the May-klong, the banks of which are thickly peopled by salt makers; the sea water being evaporated, is repeated by fresh artificial inundations into quillets like those of a paddy field; the salt is sold at three annas a basket, and pays one rupee eight annas duty! Passing the chokey we leave the main branch of the river, which runs away westerly to fall into the sea, and at 7h. 50m. enter the Maha-tshi Canal, which runs north-east to Bankok; just above the bifurcation is situated Moung-tachin, an uninhabited low square brick fort, and immediately below it a village of Talines of nearly 100 houses, joining which is the Siamese town of Moung-tachin. The water here being salt they get their water from Bankok for six months in the year; the Chinese, who appear to monopolise the traffic of the country, bringing it down in jars, or in perfectly tight boats which they fill; the price is sufficiently moderate. Here a tay had been built for our reception, which we reached at 8h. 15m. having been on the way about six hours. The Myo-won's brother was at the tay to receive me, and he himself soon afterwards came out in a sort of Chinese monshell; he was dressed in China

crape; indeed the whole furniture and ornaments of their houses, and most of their clothes, are borrowed from that people. He was quite civil, and remained about an hour; he told me it would be expected I should remain here till the next day, against which I in vain remonstrated. The people were all feasted, the dinner placed on little tables in the Chinese manner, and an abundance of pork and vegetables, fruit, sweetmeats, and tea, &c. &c. &c. were brought out for me. The Myo-won told me there were about 1500 Talines here, and I learned afterwards from a brother of the Hloot-dăn writer at Maulmain, who is a refugee and most anxious to get away, that there are on the different branches of the river about eight or nine hundred families of Talines, many of them employed in making salt.

February 8th.—Bankok, 13h. 30m. About 7 A. M. the Myo-won came to the zayat, having previously sent out breakfast for myself and the people, and said we had better now start. He asked a number of questions regarding the objects of my mission, which, having the orders of the ministers, and boats sent by them to convey us to Bankok, he ought not to have put; as however I had no object in refusing, I answered him in detail. He came to the end of the wharf to see me off, and hoped to see me on my return. The boats which had arrived from Bankok in the night were large, commodious paungs (long boats with a house on them) sufficient to convey every body with comfort, manned, the one by twenty Talines, the other by twenty Cummins, or Cambodians; the Talines were dressed in blue shirts and trowsers, and black bamboo-work hats, and the Cummins like Malays, whom they very much resemble in appearance. We started at 9 A. M. the tide turned against us at 10, and our progress was consequently very slow; at 4h. 45m. we were obliged to halt from want of water, and remained till past 10 P. M. when we started at quarter flood. At 11h. 20m. P. M. we enter a cut made from the head of the Mahitchi to the small stream which falls into the May-nam, which completes the communication through the Nakoutchathee branch between the May-nam and May-klong; this we passed in seven minutes, and in half an hour got into deep water on the Bankok

side of the cut. Since dark, the light in the boat prevented us seeing any thing on the banks. At 4h. A. M. halted at the British factory, on the side of the river opposite the fort and city of Bankok, and found Peadadie, the port Captain, a Benedito (who has received from the king the title of Peavitsit) commandant of artillery, and Pascal, all native Christian Portuguese, waiting my arrival at a mat house, Mr. Hunter, under orders from the ministers, had prepared for me just between his own compound and the river. Mr. Hunter, who has a Siamese title, and whom they consider in some degree as a Siamese officer, also came down to receive me.

February 9th.—Bankok. About seven or eight o'clock a message was brought from His Excellency the Praklang (minister for foreign affairs, whose house is on this side of the river, and close to the British factory) requesting to see Mr. Hunter, who immediately waited on him ; after he had been gone some minutes, he sent a note to say the Praklang wished to see copies of the letters, if I had them, and had no objection to send them (to which as I saw no objection) I forwarded them by the person who brought the note. During Mr. Hunter's absence a son of the Praklang's, an exceeding intelligent young man, came to see me,* and a present was brought me from the Praklang of fruits and sweetmeats ; and Mr. Hunter, on his return, said the Praklang was very much pleased with the letters, and would be glad to see me in the forenoon. About twelve o'clock boats were reported ready to take us to the house of the minister, but just as we were starting, a second message arrived to say the king was so much inclined to be friends with the English, that though the letters were not addressed to him, he would receive them as though they had been, and that a boat would be sent for them ; and as the letters were to go to the king, the Praklang begged us to defer our visit till the evening. In a few minutes one of the royal state boats, with a roof of embroidered cloth of scarlet and gold, and rowed by about

* I afterwards doubted if he came on my account, and had good reason to believe he did not.

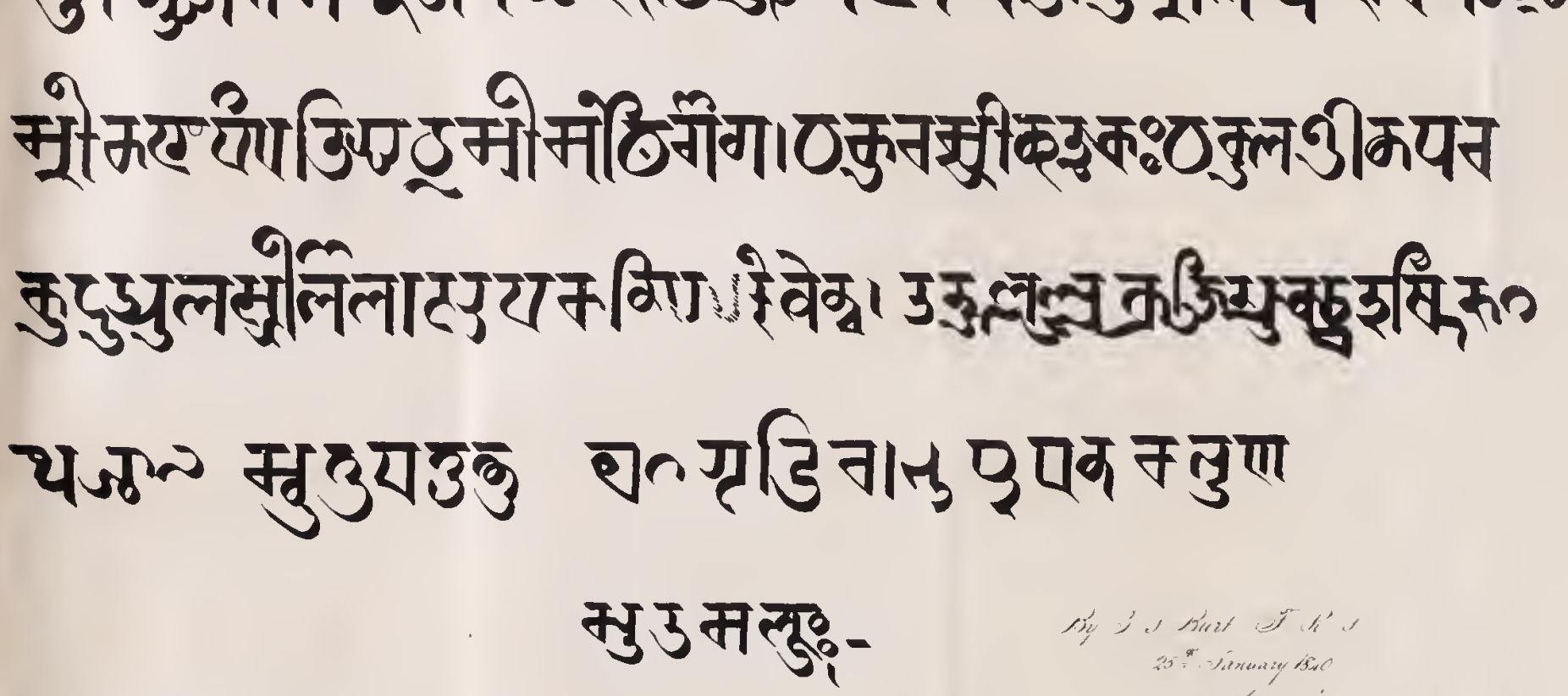
forty men in the royal livery (red jackets), and commanded by an officer, was announced, and a proper vessel for the reception of the letters brought up, covered with a cloth of gold embroidery; on this I placed the letters both of the secretary of the government of India and the commissioner, and carried them myself (a Siamese officer covering them with a red umbrella) down to the boat, where they were respectfully received, placed in the centre of it, and covered with an umbrella. We departed attended with three other state boats. Soon after dinner a message arrived from the Praklang to say he had sent boats for our conveyance, and was ready to receive us, I accordingly went; Mr. Hunter, Captain Browne, Captain Hughes, Mr. Smith, and Mr. Hayes accompanied me. Mr. Hunter, who kindly acted as interpreter, and myself went in the state boat sent for me, and the other gentlemen in Mr. Hunter's boat, the Ghyne-Goung-Gyoup, a Burman officer who accompanied me, and whom I begged Mr. Hunter to mention to the Praklang, and some of my Burman followers in a second government boat; we reached the Praklang's in about five minutes, and found him with the second Praklang and several other officers of rank already assembled; chairs were placed for us at the opposite side of the hall to where the Siamese officers were crouched on their elbows, and coffee was served to us in a handsome set of Dresden China. The hall was a long and handsome room, entirely in the Chinese style, and splendidly lighted up with English lamps and chandaliers. We walked at once up to the chairs; when seated I saluted him by raising my hand up to my forehead; removing our shoes was not once alluded to; indeed all the English gentlemen always retain them when visiting His Majesty or his ministers. Conversation was entirely between the Praklang and myself, except for a few minutes, when he addressed himself to the Goung-Gyoup through a Taline of his household. I explained the purpose of my visit to be to assure them of the wish of the Indian Government to strengthen, if possible, the already firm friendship for many years uninterrupted, and begged them to receive the thanks of the commissioner for their kindness to our traders, and for their prompt endeavours to discover and

release Mrs. Breisley.* I expressed my sense of the friendly act of the king in receiving the letters himself; the Praklang replied that the Siamese government were equally anxious with the English for the increase of existing friendship, and were much obliged to the government of India and to the commissioner for sending, and to myself for coming through such a desolate jungle as that I have crossed. I was asked the usual questions as to the health of the Right Hon'ble. the Governor General of India and other members of Government; how long I had been on the road; how I had been received; and whether all my people were well; to which I returned the usual answers, and expressed my thanks for the kindness which I had received. I mentioned the deception practised by the governor of Nakoutchathee; he said it was all out of kindness and consideration for my own comfort, and laughing heartily, he said he could not conceive how any one could prefer travelling in the sun to lying quietly on his back in a boat, and progressing by the labour of other people. He then alluded to what I had mentioned to him through Mr. Hunter in the morning; the indignity they had offered in making the walls of the hall they had prepared for me and my people of materials which had been used in the funeral of the late queen, than which, according to the superstitious notions of the Burmans, and of course of the Siamese, no greater insult can be offered in Burma; no one but the Toobayazah (who with his whole family are so degraded that no one will associate with them) will touch any article which has been so defiled; in fact, with the peculiar notions of these people; it was impossible for me to avoid mentioning it; he said they had no such feelings regarding these

* The wife of an English gentleman who left Mergui with his family in the disturbance in 1829, with the intention of applying to the Penang government for assistance. They were supposed to have been murdered by their Malay boat's crew as they had a good deal of property on board, but as reports reached Penang and Maulmain, where some of the lady's friends reside, that she had been seen in some of the Siamese Malayan states the commissioner in the Tenasserim provinces wrote to the ministers, who at once sent for the people described, they however turned out to be Burmans who had accompanied some ship's officers many years ago, and had no wish to return.

Facsimile taken at a mill in Pinjor, between Kiarn and Umballah.

Pl 3.



By J. S. Burt F. R. S.
25th January 1840
Karnaul

T. Black Asiatic Lith. Press

things in Siam, which I know is not true, and Mr. Hunter had heard the people in passing making remarks on the materials, but was not aware of the feelings on the subject. The Praklang offered if I wished to have it immediately taken down; I told him that of course I should be obliged by his doing so, as I could not use the house until it was altered. The Praklang seemed excessively annoyed that I had been told of it, and gave orders to prevent the people communicating with my followers; of this I complained, and asked him to remove the restriction; he said they have always been enemies with the Burmans, and could not now feel otherwise; but as they had come with me no restraint should be put upon them, but they must tell the officer on duty at their quarters when their friends came to see them. I pointed out to him, that these people had no more to do with the Burman government than the Siamese, and that I only wished them to have the same liberty the Siamese had when they came to Maulmain. He said such was their friendship for the English, that they might go when and where they pleased. He then asked me if I had served in the last war with Ava, and whether it was likely we should go to war with that country again. I explained the conduct of the present Burman government towards Colonel Burney, the forbearance of the government of India, and its wish to avoid a war, but that fears were entertained that it would be impossible, from the warlike preparations made by the present king, his refusal to consider himself bound by the treaty of Yandaboo, or receive the present resident. A good deal of conversation passed on this subject; he did not, however, proffer any assistance, nor did I think it necessary at this meeting to make any request about the cattle. He asked me how and when I proposed returning; I said it was impossible for me to say; he assured me I might go in any direction I chose, by land or by water, and remain as long as I pleased; he requested me to wait a couple of days, when I should be introduced to the king, for which honour I expressed my thanks; we took our leave and returned home. The Praklang is a fat, good tempered old gentleman, about sixty, he received us with nothing on but the cloth round his loins, seated on a raised platform or square couch.

His manners are said to be much changed since his first arrival at his present dignity; he was then haughty and imperious, he is now friendly and affable, a great favourite of Mr. Hunter's and all Europeans frequenting the port. In the evening Coon-sit, the son of the Praklang, who is intimate with Mr. Hunter, and whom he meets on terms of perfect equality, came in for an hour to our residence; he is a modest and unassuming man, of considerable intelligence; he writes English pretty well, understands nearly all that is said to him, and speaks a little. He has considerable mechanical talent, and has just finished a ship on an English model of about 400 or 500 tons; he is by some said to be an eaves-dropper, and to take advantage of his intimacy with Mr. Hunter to listen to and report to his father any inadvertent remark made by Europeans.

Memoranda respecting the existence of Copper in the territory of Luz, near Bela. By Captain De la Hoste, *Assistant Quarter Master General, S. R. F.*

[Communicated to the Society from the Political Department, Government of India.]

During the absence on sick leave from the Sinde Reserve Force, Captain George Boyd, of the second Grenadiers, performed my duties, and having heard that antimony was procurable near a place called Shah Bellawl, he sent one of the guides to survey the road to that village, and make inquiries on the subject of antimony being found there.

On the return of the guide (second guide Esso Rama) he brought with him specimens of *lead* as well as of antimony, both of which were sent by Captain Boyd to Dr. Hedde, Assay Master in the Mint, Bombay. Having shortly after arrived and assumed charge of my appointment, it became my duty to extract the route from the guide's field book, when on questioning him respecting the place to which he had been (Hoja Samote) I found he had been informed, that in former days copper, silver, and gold had been found in the mountains near that village. Considering the report worthy of being inquired into, I sent for the brother of Navillull, named Sukkaramdass, and asked him if he had ever heard any thing of the report; he informed me that he had, and that a banian of Kurrachee

had been near the town of Bela, and brought away specimens of copper ore, which he melted and sold at Kurrachee, making a considerable profit; but that the Jam of Bela had heard of, and prohibited his returning, having punished those who gave him the ore. I requested Sukkaramdass to bring the man to me, or his son, if the man himself was dead, as I feared he was. On the 4th December Sukkaramdass brought the son of the man who had been to Bela, and his statement is as follows.

Twenty years ago, the informant, a banian named Kattoo, and his father Phuth, having dealings at Sonmianee, were informed that tamba (copper) was procurable from a mountain near Bela, they accordingly went to within four coss of the mountain, and got about three maunds of ore from some Belochees and Baboonies there; they melted this, and it yielded nearly half a maund of excellent copper; they took a very small specimen of this, and went to the brother of the Jam of Bela (Kesser Khan) and offered to work the ore under his protection; he at first seemed inclined to listen to the proposal, but an old man, named Neroo, of Shikarpore, said, that if he agreed or caused his brother Ali to agree, he would lose the country; on which both Kesser Khan and the Jam Ali desired the informant and his father to go; and told them if ever they again came there, they would be buried alive. They left Bela, and brought with them the copper they had concealed, which they sold at Kurrachee, making a good profit. The following questions were put by me to the banian.

Question. How did you go to Bela?

Answer. By Sonmianee.

Q. Is there any other road to it?

A. Yes, by Shah Billawl, and the Kunnaraj river.

Q. How far is the Kunnaraj river from the place where copper is found?

A. I believe about 20 coss, but do not really know, never having been that road.

Q. Where did you get the ore (muttee or phatur) from which you extracted the copper?

A. From a hill 12 coss south-east of Bela; some Belochees brought it to us.

Q. Do the people work the ore?

A. No; they are ignorant Mahomedans, and think of nothing but their cattle and thieving.

Q. Is it known to many that the ore exists?

A. I do not know; but believe it is; the Jam is aware of it, and some of his people.

Q. Of what description was the copper you brought?

A. Of the best, equal to that sold in the bazar, which is sheet copper, and comes from Velété (Europe).

Q. What average does the ore yield?

A. Some will yield $\frac{1}{2}$, others $\frac{1}{3}$ or $\frac{1}{4}$, but the average is a little less than $\frac{1}{2}$.

Q. How did you extract it?

A. We simply melted it with wood in a mud furnace, and the copper ran off like a stream of gold.

Q. At what cost?

A. At that of the firewood, which is mere nothing.

Q. What is the value of copper here (Kurrachee)?

A. Sixty rupees for 80 lbs. the best.

Q. Do you know the value of 80 lbs. of copper in Bombay?

A. I believe, about 42 rupees.

Q. Where is it brought from?

A. It is sheet copper, brought from Velété (Europe.)

Q. What would be the cost of bringing 60 lbs. of copper from the place you had the specimen you speak of?

A. I could, I think, bring 60 lbs. of copper to Kurrachee, and sell it with profit for 30, or 28 rupees less if worked on the spot.

Q. Are any other metals found where the copper is procured?

A. I cannot say; we searched by stealth, and were afraid of being discovered; but it is said that silver is found in these mountains.

Q. Did you ever hear of a black substance like charcoal, which burns well, being found?

A. No, I never did; but I have told you, how much afraid of being found out we were.

Q. Could you shew me the hill from which you got the copper?

A. Certainly, I saw it plainly, and could point it out to you.

Q. Is there much of the ore ?

A. Yes, it is a mountain, and you could get any quantity.

Q. Are lead and antimony found there, (Shisa ? Soorma ?)

A. Yes, in abundance, the latter is exported.

From the foregoing information, it appears to me, that no doubt can exist respecting the existence of copper in the vicinity of the Kunnaraj river, and Bela.

Firstly, Because the guide heard such a report at the spot from the people of the place.

Secondly, Because it was known to the native Sukkaramdass.

Thirdly, Because I have conversed with a person who declares he has been there, and because it is well known to more than one person, that he had procured copper and sold it at Kurrachee.

This statement is clear and distinct, and I think at least worthy of notice and inquiry, if not of implicit belief.

P.S. I have been promised specimens of the ore, and that it shall be melted in my presence ; when brought it is my intention to weigh the ore, and ascertain what proportion of copper it yields.

Memoir on the Climate, Soil, Produce, and Husbandry of Afghanistan and the neighbouring Countries.—By Lieut. Irwin.[1]

PART IV.

Husbandry and Cultivation.

165. It was originally my intention to have attempted a treatise of considerable length on this subject, in which would have been mentioned all the cultivated products, as far as ascertained, of all the districts. To this would have been added an account of the operations of agriculture in some of the most interesting and best known of them, with some details of the life of the poor. Various reasons now withhold me from this attempt, and among them the chief is the want of time to execute it with

[1] Continued from p. 1015. vol. viii.

tolerable accuracy. I have in consequence greatly restricted the plan. The matter which is here to follow, relates to two heads; 1st, Some particulars of the husbandry of these countries in general; 2nd, A review of the districts; in which an attempt will be made to estimate, or enable the reader himself to estimate, their present degree of cultivation, the supplies they yield, their population, and the distinction of their industry; this is, as it were, the summing up of all. It is much to be regretted, that it is the most difficult, as well as the most important of the subjects attempted, and that in which the conclusions drawn, will the oftenest be found vague, unsatisfactory, and erroneous; nor could it be otherwise, if we advert to the natural difficulties of the subject, when it is necessary to proceed on report merely. The witnesses, though numerous for the elucidating other subjects, were few for the elucidating of this, which requires many concurring testimonies, and much minuteness of testimony. The local and national vanity of informants, not to mention individual prejudices and hasty judgments, forbid our relying on their opinions as judicious and impartial; could they be relied on, still there is much difficulty in ascertaining the exact force of those comparative terms, which in all cases must be used, for they assume a different meaning according to the standard to which the mind of the speaker has been accustomed.

Section I.—*Of Husbandry.*

166. Lands in these countries are divided into irrigated and not irrigated, or in the local Persian *abee* and *lulm*; this last term I have for brevity's sake retained. Lulm is itself of various kinds; that which most strictly deserves the name is commonest in Chuch and the plain of the Mundurs, where the quality of the soil is excellent; the fields are merely ploughed in the ordinary way, and not divided into partitions, nor is any other contrivance used either for the retaining the rain which may fall on the surface, or for receiving any supplies from other quarters. But in general, lulm lands have some advantage in this particular, natural or artificial. In hilly countries the hollows which ne-

cessarily receive part of the rain falling on the neighbouring heights are cultivated in preference; others are so situated that it is easy to turn on them the water of nullahs, and these are not reckoned irrigated, but lulm, (see paragraph 78). In Toorkistan, certain lands are distinguished into a class as receiving in the spring a great deal of thaw water. There are other lands, which depend entirely on the rain which may fall on their own surface, but have been provided with a high bank of earth which surrounds them and retains the water; such may be seen at Oormul, a village about 9 miles south-east of Peshawur; they are every year under crop from one generation to another. There is still another species of lulm quite distinct in its nature from all the preceding, being land moist in itself, without requiring for the success of the crops raised on it rain or any other supply; such is in Cabul called *za*, and in that, and similar climates, is commonly in the state of natural meadow. In Hindoostan are considerable tracts of it, being the low banks of rivers subject to be under water for a great part of the rainy season, and large spaces lying under the great northern mountains. In Mooltan, where it is considered as the most valuable species of land, it is called *sew* or *seo*, that is literally border, because it lies near the rivers.

167. Irrigated lands too, may be divided into species whose differences it is important to note. Some lands are only imperfectly irrigated. The Kamojoe Kafirs turn the water of springs upon their fields, but the supply is so defective, that summer showers are anxiously looked for. In most cases, rain in the accustomed season is welcome to the owner of even well irrigated lands, as saving him the trouble and expense of watering. Irrigated lands may be divided into those which depend on springs and natural streams; secondly, those which depend on wells; thirdly, those which depend on *kahrezas;* fourthly, those depending on dams. The first kind contains several species. In the vallies of mountainous countries, and in plains under mountains, it is easy to conduct the water of streams from a higher level upon the fields, and this constitutes the first species; but in open and champaign countries the difference of level is seldom so considerable as

to admit of this, it is therefore necessary in watering from the rivers or the canals which are drawn from them, to raise the water by machinery. I have heard that on the bank of the little river Turee, which runs near Jumboo, and afterwards falls into the Chunab, there is a machine for raising water out of it, which is turned by the current of the river itself. But I believe no other instance is known, where instead of the force of the water a living force is not employed; this species therefore approaches to the second kind, or that of wells. In Mooltan and Sindh, the most common mode of watering is by what are called *jhulars*, which are half wells cut out of the edge of the channel within which the canal runs. Jhulars are used by the Daoodzyes and Mihmudzyes, and are not unknown on the banks of the Oxus, in the dominions of Bokhara; but in the whole of Toorkistan, the only mode of irrigation worth attention is the first species, or that in which streams are turned upon the fields.

168. Wells may be divided into three kinds; the 1st is the cutch well, which in Hindoostan they call *Dhenkulee*, or rather that name is applied to the pole, which in this species is used. 2d, The Persian wheel, called in Persian, *Churkh-Chah*; and in Hindoostan, *Ruhut* or *Hurt*. 3rd The bucket well. The first species is proper only when the depth to the water is very small. In the Punjab it is sometimes used in irrigation. In Cabul and Kushmeer it is employed only in wells whose water is drawn for domestic purposes. The Persian wheel is proper for moderate depths; it brings up the water by means of pots, in a manner already described by travellers in Egypt, in which country it is very common. I believe it to be found in Mesopotamia, and in certain quarters of Persia, but in large spaces of that kingdom it is utterly unknown, neither is it known in Khoorasan, and it is barely known in Bactria and the west of Toorkistan. It is this wheel which is worked in the *jhulars* of that country. There was once a Persian wheel in Cabul, but now there is none west of Jellalabad. In Peshawur, Chuch, and Sindh, it is the chief kind used; it even extends into Seeweestan, but in that country streams are partly used in irrigation, and for drinking they have another kind of well, to be

mentioned. Towards the quarter of India, we may trace the wheel through parts of Chuch, Jodhpoor, Oodpoor, and Goojrat as far as Bombay; in the north it extends to Loodhiana, in the upper part of our Dooab, but it is lost as the traveller proceeds thence towards Delhi. There is only one east of the Ganges. There is no doubt that it might be adopted with great advantage in all our provinces, especially where the water is at a medium depth below the surface; but where it is beyond fifty feet, the weight of the pots is so great that the use of it will be no longer economical; and instead, ought to be substituted the bucket well, which is the third species enumerated. It has some varieties, which need not here be adverted to, as only one is well known in these countries. The bucket is of leather, and is raised by a single rope which passes over a pulley, and is drawn by cattle; this is the commonest well in Toorkistan and Khoorasan, where however it is not used in irrigation but only for the supply of water for men and cattle. The pasturing tribes in the west of Toorkistan and north-west of Khoorasan carry buckets with them, with which they draw water. In India this species of wells is on the whole the commonest; in the desert and the arid tracts lying east of it, the water is at too great a depth in the soil to admit of any other.

169. The third species of irrigation is still more expensive and operose. It is that by kahrezas, or aqueducts, by which the water of a hill or rising ground is brought out at its foot in a rivulet, to be disposed of at the pleasure of the farmer. A kahrez is usually made in the following manner:—A well is dug at the spot where it is intended the water shall issue; above it, in the acclivity, is dug another at the distance of from five to twenty yards, according to circumstances and the custom of the place. It is said great skill is required to judge what hills will yield a copious rivulet and in what line it is most advisable to conduct the kahrez. The wells are continued at distances generally equal, until the owner thinks the quantity of water will be sufficient, or until the depth of the wells (which however does not increase at the same rate as the height of their summits in the acclivity) becomes so great that the expense ex-

ceeds the advantage. In Ghaeen, Toorshish, and some other parts of Khoorasan, the highest wells are sometimes 70 yards deep, but in countries better supplied with water, they are much shallower. All the wells are connected below by means of an aqueduct through which water flows to the foot of the hill. Kahrezas are known in almost all parts of Persia and Khoorasan, in the west and middle of Bulochistan, in the country of the Tureens and Bulochees, in the table land of Ghuznee, and even Cabul, but they are not to be found east of that district. There is at present not one in repair in the whole of Toorkistan, but in the last generation a considerable number were dug by Koobad Khan Undijanee, lord of Koonduz, with a view to the cultivation of hilly wastes called the Dushti Jubulda, but they are now gone to ruin. Very good kahrezas will turn a small mill of the country. The most famous is that in the neighbourhood of Ghuznee, ascribed to Sultan Mahmood. Including its branches it is asserted to be 12 koss, but this is probably an exaggeration. Many kahrezas are two miles long, and in some quarters a great one will cost 20,000 rupees. Such works do great honour to those nations, and are one proof out of many of their industrious dispositions.

170. Wells are proper in level champaign countries and plains, in which water is found throughout at a moderate depth; natural rills are chiefly useful within hills of considerable height, or at their foot. Kahrezas are natural to a country when the hills are low and unconnected, and consequently send out no constant streams; but when there are found vallies among such hills, which in the seasons of rain receive the water of the neighbourhood, but are dry during the remainder of the year, it may become advisable to retain that water (to be used when in future most advantageous) by extending a dam across the valley in a convenient situation; these are the dams most common, and which peculiarly deserve that name. The water of a feeble stream is sometimes dammed up for future use; and dams are often required in drawing a canal from a river, or diverting the channel of a constant stream; but such fall under the first species of irrigation. Rain water dams are common in the Soolemanee hills, and in some quarters of Seeweestan. There

are ruins of very magnificent dams within the Paraparnisan mountains. Somewhat similar to dams, are tanks, very much used in irrigation in some quarters of India, but very little in any of those countries, and in most of them not at all. The method of scooping water is probably unknown beyond the provinces which border on India.

171. India has two harvests in the year, the products of which are for the most part distinct, but not always. The *rubbee*, sown in autumn and the beginning of winter, is cut in the spring, and consists chiefly of wheat, barley, chunna, musoor, peas, and beans, most of which are raised in cold climates also. The *khureef*, sown during the rains, or immediately before them, is reaped in the autumn, which is the harvest time of the higher latitudes; but the khureef products are seldom capable of being cultivated to advantage in them, being rice, maize, jooaree, bajra, moth, moong, oord, murhwa or baggy, and some others. These two harvests thus distinguished, extend as far as Jellalabad and Lughman, and generally to the cold climates; but these last, and also the warmer ones beyond them, are commonly said to have the rubbee only; this is strictly true of the very coldest,—such as the Tibets, the greater part of the Huzara country, the upper parts of Budukhshan, and some others; but with respect to the more temperate, some circumstances may be stated in modification of it. It is of little importance what phraseology we adopt, provided the facts be kept in mind.

172. Even in Cabul many products of the khureef are actually raised, and probably all might be raised. In the whole of the west of Toorkistan beyond the Oxus, and of Bactria, jooaree is one of the greatest crops in the country, and does not fall short of the Indian either in quantity or quality of produce. We may trace it into the country of the Kuzzaks and Kirghizes. Maize grows in all but the coldest countries, as well as in India, except that there it is sooner ripe. It has been but lately introduced into Cabul, Candahar, and most other of the neighbouring countries. In those quarters it is raised not to be ground into flour, but be eaten whole after being roasted. Mash, which includes oord and moong, is a common produce in Toorkis-

tan, parts of Khoorasan and Afghanistan. Rice is the chief corn of Kushmeer, and is raised in all but the coldest countries, provided there be a sufficient supply of water; it seems however to degenerate in quality in such countries. In the warmer parts of Khoorasan, were there but summer rains as in India, the khureef might be expected to be equivalent to the rubbee. Not only can we trace some of the products of the khureef into the moderately cold climates, but we may mark two harvests tolerably distinct in their seed times and their products. This may be exemplified by a sketch of husbandry of the valley of Cabul. The great seed time is the autumn, in which are reaped wheat, barley, musoor, and peas; these are reaped chiefly in the month of June, having lain under the snow during winter and been protected by it. All of them are sometimes sown in the spring, and this practice is far commoner in Budukhshan and many other quarters, but the spring-sown are cut nearly at the same time with the autumn-sown. To this harvest belongs chunna, which is very rarely sown in the autumn, but beans are sown about the end of May and reaped in the end of September; the autumn-sown products, together with chunna, may be said to form the rubbee of Cabul, which is by far its greatest crop. There remains however some considerable products which have different harvests. Besides beans, which in India belong to the rubbee, we may mention the two grains there called *cheena* and *kungunee*, in Persian *urzun* and *gal*. In India they are scarcely considered as belonging to any season, for by the help of water they may be raised equally well in all. The cheena however is more commonly cultivated in the rubbee, or rather after it, and the kungunee in the khureef. In Cabul they are raised sometimes for fodder and sometimes for their grain. In the latter case they are sown in the beginning of May and reaped in August. Maize and mash are sown a few days later, and reaped in September. Rice, a far more important product than maize, is sown in May and June, and reaped the end of August and September.

173. It is even practicable in this valley, by good management, to gather two crops within the year off the same ground. In India the farmer usually contents himself with one crop in

the year, and the rubbee and khureef lands are distinct. In Cabul there is a similar distinction between spring lands and autumn (buharee and teeramahee). A good farmer ploughs his spring lands in autumn, and gives them a red winter fallow; and his autumn lands in spring, giving them a red summer fallow; but where plenty of manure is to be had, he both gives more to his fields and exacts more from them. After cutting his wheat, barley, and other rubbee products, but especially after barley, he ploughs and sows other things which come to their perfection in the autumn. Kungunee and cheena intended to ripen, can scarcely, in Cabul, be raised after wheat, but may be raised after barley, which is about twenty days sooner. In Bulkh considerable quantities of these grains are raised after barley, and sometimes after wheat, for the harvest there is earlier. In Cabul they may be cultivated for fodder even after wheat. The kungunee, when its ear is forming, is eaten down by sheep or other animals; the cheena is reaped in the same state and given to stack. In Bulkh they sometimes raise maize, mash, melons, and garden vegetables and greens, after wheat and barley; but chiefly in Cabul, certain only of these can be raised to advantage in this manner, for the land is there scarcer than in Bulkh, and the farmer studies to draw the utmost from it; the lateness of the harvest and coldness of the autumn often defeat his intention.

174. The grains and garden vegetables just mentioned are, in general, the same which are cultivated in England—carrots, turnips, radishes, cabbages, lettuce, cauliflower, onions, garlic, &c.; to these are added some from India. The mothee of India gives but little produce in Cabul. The shukurkund, or sweet potatoe, is not known even in Peshawur. Most garden vegetables are cultivated in spring ground, some in ground lately under rubbee. Melons are commonly raised in spring land. In Bulkh it is customary after cutting barley, to plough, manure, and sow a mixture of mash, musk melons, and water melons, which all ripen in the autumn. In Candahar there is no difficulty in raising the paliz (for that is the name given to a crop of melons or cucumbers) after the rubbee. Great quantities of manure and water must be given to the paliz. In certain places in the

east of Bactria, however, it is lulm raised. Next to their fruits, the natives dwell on the excellence of their paliz, and it forms no inconsiderable object of attention to the farmer; it is most abundant in the neighbourhood of cities; in very remote and rustic parts it is unknown, but they are few. Few things that are cultivated, derive their qualities so much from the soil as from some unknown circumstances. Futehabad, on the road between Jellalabad and Cabul, is famous for the excellence of its water melons; near this place Shujaool Moolk was defeated in June 1809. All the products which have been mentioned, including paliz, are, in Khoorasan, included under the name *subzbur*, except wheat and barley, which are called *sufedbur*. In Toorkistan, the terms *kupood*, *burgee*, and *sufedburger* are substituted. The distinction is recognized in the revenue system, and the rules of collection from each are sometimes different.

175. The boast of the natives is their fruits. Those of Cabul are acknowledged to be good, even by the Persians, whose country is celebrated for its fruit, and who are generally loth to commend any other. The Cabulees probably lavish too high praises on their fruits. Their pears at least are but ordinary; their apples are inferior to those of Kushmeer, and even they, when brought to India, are not so good as the English or American. It is but just to observe, that the most delicate and luscious varieties of the fruits are not capable of being preserved for exportation, and a foreigner cannot judge of their merits, without visiting the place. The following are the chief fruits of Cabul—the apple, pear, plumb, cherry, peach, apricot, quince, mulberry, pomegranate, almond, walnut, and grape. The fruit called Allo Bokhara, is not here raised; it is quite unknown at Bokhara. The greatest quantities are raised in the district of Ghuznee, whence it is exported, but some are produced in particular places of Khoorasan. The mulberry has been already mentioned, and appears to be a most important object of culture in certain parts of the country; the walnut is cultivated in the neighbourhood of Cabul, but on the whole, it ranks rather as an uncultivated, than a cultivated product. In the valley the season of fruit begins about the time that the

barley is reaping. The earliest species are certain kinds of mulberry, the plumb, and a kind of apple called Jaurisigurma. The latest fruit are certain kinds of apple, which ripen in the end of September and beginning of October. The apricot is very abundant in Ghorbund. The grapes of Cabul are much celebrated, and comprehend many varieties and degrees of estimation; the earliest are ripe in the last days of August. The fruit gardens of Cabul on the whole, occupy a considerable part of the valley, and furnish one of the greatest exports of the country. In Khoorasan the fruit is good, but it does not form a prominent object of culture. The pomegranates of Candahar are large and good; some are exported. The natives of Toorkistan boast of the goodness of their fruits, and probably with justice, but little reaches India. The quince of Peshawur is said to excel all others. The place produces no other fruit of remarkable goodness.

176. Hay is known in most of these countries, but not in all places of them. We have already seen that most of the pastoral nations trust the subsistence of their stock during the winter to the withered grass still remaining in the pasturing grounds, even though it have been buried to a considerable depth under snow. I have already mentioned the custom of the Hazard Ymaks, and others, of reaping the natural grass of their pastures, to serve as fodder during the winter. With respect to the provinces towards India, and formerly part of it, their customs, in this respect, are the same as those of that country. No natural grass is reaped for hay; the only exception I am acquainted with in the whole of those wide countries, is the custom in the countries east of the great Indian desert of cutting grass at the end of the rains. A provision of grass is reckoned necessary to enable a town to stand a siege. The cultivation of artificial grasses is (I believe) quite unknown in India, but it is very common to sow certain of the khureef products, such as jooaree and moth, with a view to cut them before ripening for the stock. When so intended, they are always sown thicker than usual, and called *churee;* part is given green, but more is reserved to be dry food during the cold season. The same custom prevails in Cabul

with respect to cheena and kungunee, as already mentioned, (see paragraph 172); but what corresponds to our clover and hay is the rishka and shufteer. These plants are found in a wild state in many parts of these countries, as has already been mentioned (see paragraph 124). The shufteer is an annual, or at least is cultivated for only one year from the same seed; it is generally sown in the autumn. The first reaping is, in Cabul, about the 30th of April, and it may be cut again twice or thrice during the course of the summer and autumn. It is little cultivated in Khoorasan. In the district of Hirat, it is sometimes ploughed in, without having been once cut, to serve as a preparation for rice. It is scarcely cultivated in Toorkistan, where it is very commonly wild. Rishka seems to be a much superior plant. It is represented as a perennial, and is in fact allowed to remain on the ground ten years, sometimes fifteen. It is cultivated in Cabul and all the countries west of it, but both rishka and shufteer are unknown in Peshawur; they require much watering. Rishka is generally sown in the spring.

177. A custom little known in India is, that of cutting what are called khuseels. By this is meant the cutting out the leaves of wheat or barley, before the stalk has risen, to be given to horses or cattle. In Peshawur it is thought that barley may be thus cut twice, or even thrice, with little or no injury to it; but wheat is more delicate in this respect, and many condemn the cutting even one khuseel of it. In Cabul no khuseels are cut, and perhaps the custom is pernicious in that climate. It is very common to eat down by cattle, the young leaves of the wheat and barley in the autumn or beginning of winter. In the Kuchhee of Mohummud Khan, both customs prevail, and the cutting of khuseel is common in most parts of the Sikh country. When a crop is likely, in the Punjab or Peshawur, to turn out an indifferent one, or when danger is apprehended from military violence, the farmer sometimes thinks it advisable to cut it down, even when the ear is formed, as a khuseel, and instead of it to sow some other product. Khuseels, in the sense first explained, are cut in all provinces of Persia; they are thought to be a good food for animals.

178. The rubbee of India and of the warm provinces of the

Afghan monarchy as far as the hills to the west, is almost invariably autumn-sown. In our upper provinces, the month of October is the best month for sowing, and that in which most is sown. Moderate rain before sowing, or in lieu of it, one watering, is favourable to the future crops, but not reckoned indispensable. In the neighbourhood of Peshawur, the owners of lands capable of irrigation never fail to give one water before sowing wheat or barley. This is called in the local dialect *tleap,* and is not considered as included in the number of waters commonly said to be given to these crops. Beyond Jellalabad there is not the same uniformity of practice with respect to seed time as formerly observed; all the products of the rubbee are, in Cabul, occasionally sown in the spring, and cheena is always so treated. In Ghobund the whole of the barley is spring. In the district of Ghuznee there is on the whole more spring corn than winter. In Budukshan the barley is generally spring, as well as a part of the wheat. In the whole of Toorkistan and the greater part of Khoorasan, the whole of the cheena is spring. In Candahar it is true most of it is winter, and spring corn is but little known in that district; but in the country of the Hazaras, except the most temperate parts, all the crops are spring; the same is true of the most lofty parts of Budukhsan, Durwaz, Keerategin and Wukheeha, the Pamer, a considerable part at least of Kashkar, and all the Tibets. From the last, the custom has spread to Kushmeer, but the rubbee there is inconsiderable. It will be found in most cases true, that the greater the cold of the place, the less of winter crops; another rule usually holds, that where the lands are irrigated, there is more winter corn, and vice versa. The chief reason assigned is, that lulm crops sown in the autumn are subject to be hurt by the frost; but the owner of irrigated lands can protect his young crops from its rigour, by watering them. This water is therefore called *yukhab,* in Persian. In Keerategin alone, the rule is reversed under peculiar circumstances.

179. In our upper provinces, the harvest of wheat and barley is in March and April. It is observed that the south-east is earlier than the north-west; but the difference is not considerable. The rule however holds good in our further progress to

Peshawur, and between the harvest of that place and of Delhi there is at least one month. On the 20th May, there was wheat still uncut in the valley of Peshawur; Bajour, Koonur, Jellalabad and Lughman are somewhat later. It is a common saying in the country, that the rubbee comes from the east (that is, begins soonest in that quarter) and the khureef from the west. The latter fact it is not difficult to explain, for the khureef here meant, is the Huramee khureef (so called in the country) which is sown in the end of May, or earlier, and is artificially watered. The causes of the former fact deserve our attention. They seem to be the following. 1st, As we proceed north-west, the heat of climate declines, and crops ripen a little more tardily. 2nd, To the west the periodical summer rains become later and later, and hence the seed time, and as depending upon it the harvest of the khureef, is retarded, which has a natural tendency to retard the seed time and harvest of the rubbee. 3rd, A great proportion of the rubbee is sown on low lands (see paragaph 166). The consequence is, that the seed time must be deferred until these lands become capable of tillage, by losing a portion of the moisture they have gained during the flood of the rivers and the periodical rains. In the second place, crops sown on such lands are later in ripening than the crops of higher lands.

180. All parts of the valley of Cabul are not of the same temperature, and in the ripening of crops on soil and exposure, June on the whole is the harvest month. Ghuznee is some days later than Cabul, and the Hazara country considerably later than Ghuznee. In Seatsung of the Hazaras the harvest is in October, and snow sometimes falls before it is gathered. Candahar is a little later than Peshawur. Bokhara seems equal with Cabul, and the harvest of other places may be calculated with tolerable exactness, from the temperature. The Pamer however is very early. The Kirghizes during their visits to it in the summer, cultivate some wheat, barley, and cheena. There wheat though later sown than the little spring wheat sown in the dominions of Bokhara, is sooner ready. We may here notice a curious circumstance with respect to the corn of the highest countries. The wheat of Tibet, the Pamer, and the Hazaras, is

bearded like that of India, but the barley (especially of Tibet) is unbearded. Not less singular is that species of barley well known in Persia, in Mushhud, Goonabad and some other parts of Persian Khoorasan, under the name of jouitoorshee. That part which is intended for seed is given to horses, with such precautions as prevent its being triturated, and thus losing its vegetative power in the body of the animal; when afterwards sown in the spring it comes to perfection in sixty days.

181. The scythe is unknown, and crops are reaped by the sickle. Wheat and barley are, in Toorkistan and most other quarters, separated from their straw on the field. In Cabul the straw is reckoned equal in value to the grain, and to prevent its dissipation, most farmers carry the crop after reaping and drying to the farmstead and there separate them. In these countries, as in India, the rubbee crops are trod out by animals, not thrashed; to these there are few exceptions. In Kushmeer the labour of men is cheap, and there all crops are separated from their straw by being beaten with sticks. I recollect to have heard of the flail being somewhere used. The methods of preserving corn are various. In Toorkistan the most common practice is to lodge it in *juts*, which locally they call wells, but in Tashkund Week-kheeha, and Keerategin, *kundoos* are commoner. These are well known in Hindustan, and are made above ground of mud and straw. In such are lodged a great part of the grain of Cabul, Ghuznee, and Khoorasan, but in cities, granaries belonging to individuals are upon a much greater scale. Many of the Dooranees have considerable stores of former years lodged in their houses. This resource secures that country from even the chance of a famine; and famines are rare in any part of the countries in question; the most common cause is the devastations of locusts.

Section II.—*A Review of the Districts.*

182. In the following review of the districts, I shall altogether omit some considerable spaces of country which have been mentioned under preceding subjects. The late embassy in Sindh must have procured information respecting the Tal-

pooree dominions, much preferable to any I can offer. During our inquiries we have always experienced great difficulties in gaining just and consistent accounts of Bulochistan, and I have learnt that government have lately received some information respecting that country; on both accounts I intend passing most of it in silence. To the south we begin with Keharapoor, and the line between it and the neighbourhood of Candahar. In my opinion there is no other line with which it so much behoves us to be well acquainted, and I therefore feel the greater regret, that the information yet obtained regarding it is so unsatisfactory. The country immediately north of it, constituting the southern part of Afghanistan, is still more obscure, and there are certain places, the routes between which we have never been able to obtain. In the account of Candahar, something will be said of the Doorranee country and Seestan. With respect to Persian Khoorasan, it will also be mentioned, though very briefly. We have to regret that our information is often the most scanty concerning those countries whose position and other circumstances render them most interesting in a public view. To the north I shall omit the Punjab as far as the river Hydaspes, as being little different from many provinces of India, and because of information already obtained of it.

Four Tuppas of Cabul.

183. The rubbee is the greatest crop, and according to our way of speaking, the only one (see paragraphs 171—3.) Wheat is the chief product, and after it barley. The poorest classes consume a considerable proportion of barley and peas in their food. There are none so poor, but that they occasionally indulge in animal food, and the rich in a great measure subsist on it. Corn is imported even from the environs of Ghuznee. Rice is brought from upper Bungush, Jellalabad, Lughman, and even Koomer; in a dear year, corn is sometimes brought from Bamean in small quantities; on the whole however the quantity of corn annually imported into the valley does not bear a great proportion to that produced in it, and provisions are seldom dear. The chief supply of ghee is from Bamean, the Hazara country, and the Ghigies, who pasture their flocks

in the southern parts of the valley and its skirts; some is brought from the extremities of the Hazara country. From Toorkistan are brought sheep, but seldom either ghee or lambs. From the Hazara country come considerable numbers of sheep. In the spring, lambs are had from the Ghiljies. Horses and ponies are imported from Toorkistan, but some are fed up in the valley. The people drink from streams, but those of the city in part use wells. Fuel is brought to the city chiefly from the south; the chief supply of timber is from the mountain Kulkucha, three days to the east of Cabul. In the valley itself there is a good deal of cultivated wood, being that of fruit trees, willows, and sycamores. In Kohistan there is abundance of natural timber, but it is not required. The orchards of this valley, which are very numerous, are chiefly in the Kohdamun, and in it the valley of Irtalif is much celebrated for the excellence and profusion of its fruits, and also for its picturesque beauties; still the most interesting object to the people is tillage. The chief pasturage is in Logur and the south, as also towards Ghorbund. The Tuppa of Bootkehak is that in which agriculture is most pursued. In the whole valley the watered lands much exceed the unwatered, but in the southern skirts there are some small spaces in which the reverse is true. Fodder is scarce and dear in Cabul, and most parts of the valley; artificial grasses constitute a considerable part of it in those quarters where pasturage is much pursued. A part of the population live under tents, in summer but otherwise houses are used, and the most common kind is the flat, roofed. In Cabul, which is a close built town, house rent and ground rent are very dear. The chief live stock is in cows, except where pasturage is followed, and there sheep are a more important object. A considerable trade is carried on by the Cabulese, especially with Toorkistan and Hindoostan; the late distractions have thrown obstacles in the way of trade, but otherwise little affected the prosperity of this city and district. The population of the city may be guessed at 60,000 souls; the villages are various sized, and on an average may contain 150 families; they are not fortified, but invariably contain small castles or private forts, of very contemptible strength. There are few wastes or spaces ill supplied with

water in this district; such as do exist are towards the southern and north-western limits. With respect to carriage, bullocks are chiefly used within the valley; those who trade to Koorasan employ a majority of camels; goods taken into the Hazara country are carried on mules and ponies; the Ghiljies who trade to Toorkistan by the road of Bameean use camels. In the trade to the eastward, including all quarters, equal use is probably made of camels on the one hand, and mules and ponies on the other.

Ghorbund.

184. This is but a small district, and on the borders are large tracts which are merely pastured; but except the waste called Regrawan (see paragraph 99) there is no considerable space where the water of springs or streams is not to be had. A great part of the district is hilly, and though the hills be often of a tame character, some of them yield pine. The houses of the district are flat-roofed. In the summer a part of the population live under black tents. The pasturage is very important, but still the chief subsistence of the people is from agriculture. There are very numerous orchards, and the chief fruits are apricots, almonds, and grapes. Raisins are brought from Ghorbund to Hindoostan. The chief cultivation is along the stream of Ghorbund, and of course the proportion of lulm is very inconsiderable. The chief product is wheat, and after it rice, notwithstanding the coldness of the climate; after rice is barley, which is chiefly spring sown; there is little palez or maize, nor are pease much raised. Wheat, sheep, the ghee of milk, and that of doomba fat, are exported to Cabul, and of course provisions are cheap. The people, who are not very numerous, live much at their ease, and the climate is healthy. The Kheshkees, a small tribe of Afghans who reside here, carry on some trade between Cabul and Toorkistan. Grass in the summer is very abundant. Some rishka is also cultivated for the wants of winter. The chief live stock is sheep, but their cows are in a considerable proportion. The pasturing people breed some horses, chiefly of a small size. Within the district the chief carriage is probably on ponies. For fuel they burn shrubs and

sometimes the branches of trees, and they drink the water of streams and springs. The chief village of the district, which is called Ufzul Khan, may have 200 houses, all the others are much smaller.

Kohistan of Cabul.

185. The term Kohistan, when used by the Cabulese especially, is seldomer applicable to a hilly country in general than to that mountainous space which lies north of the valley of Cabul; every valley in it has its stream, and there are many springs among the mountains; timber too is plentiful, and in the summer, grass. The inhabitants chiefly subsist on mulberries, and after them perhaps their grain and their live stock are of equal importance. I know not that any of the tame animals can be said to be the favourite stock. Of grain, wheat is most cultivated, and after it kungunee and barley. Some grain is imported, especially from the Kohdamun, and the returns are made in cheese, which is here very good, and cotton, a product we would not have expected in a country so cold. On the whole, however, there is but little trade internal or external, and the people live much to themselves. The country is strong, and at times refuses revenue. The people live in flat-roofed houses, and those who attend the live stock to the mountains in summer do not use tents. The villages are small but numerous; and though the surface under the plough be little, the population is not inconsiderable. Wheat and barley, with very few exceptions, are autumn-sown and watered.

Jellalabad.

186. This district is very diversified, and many of the following observations are not true when applied to certain parts of it. It may be said to begin in the eastern quarters, near Umburkhara, in the vicinity of the Markoh or Bedoulut, to extend west to Nimla Kuja, a town of the Khogeeanus, a tribe of Afghans, is within the revenue division, and being situated nearly on the crown of the range of 34°, which is here moderately high, is a cold place. The other towns and villages, with but few exceptions, are in a warm climate, and there are

two crops in the year, as there are in Kuja also. The chief subsistence of the people is from tillage, but they have considerable herds of cows and buffaloes.

It may be observed, however, that in these countries the keeping of both these animals depends, or is supposed to depend, on agriculture. In the winter great flocks of sheep pasture in certain parts, but they do not belong to the inhabitants of this country, but to the Ghiljies to the west. The khureef is the greater crop, and in it, rice; but the quantity of maize is also considerable. The wheat, barley, and maize are nearly equal. A part of the wheat and barley are raised lulm, and some is spring sown; all the khureef is irrigated expect it be some jooaree, which is raised for green food; that plant is not cultivated for its grain in any of the districts north of the range of 34°, and bajra is not to be seen. In Jellalabad the quantity of chuna is very small. For watering their lands they use living streams, and in certain parts rills from springs. There are no kahrezas, or dams, but in some quarters khwurs are turned to account. Wheat is imported from Bajour into the town of Jellalabad, which may contain 10 or 12,000 inhabitants. To Cabul is exported sugar and cotton, some apricots and pomegranates; the pomegranates of Kuja are much esteemed. Cabul returns chiefly dried fruits. Jellalabad lying on the road from the east to the west, certain of the inhabitants of its villages subsist by the hire of mules and other animals; and the supplying of provisions to travellers of all descriptions is an important object. Fodder is in general but moderately plentiful. For fuel they burn dung, shrubs, and those along the river, drift wood. The chief supply of timber is from the white mountain, and others connected with it. The houses are flat-roofed. In the villages they drink from streams or springs. In the town there are also some draw wells. There is little fruit compared with the countries to the west; and if we subtract the transit trade, the district carries on but little traffic. The inhabitants are few who use tents in any season of the year. Their villages are small, and there are considerable tracts, both hill and plain, without cultivation, and some of these without water. Bullocks are the chief carriage within

the district, and in its intercourse with others, perhaps mules are most used.

Gundumuk—Ishpan—Khingul—Tugao, &c.

187. By means of these names it is intended to designate that space of country which lies between Cabul and Kohistan to the west, and Jellalabad and Lughman to the east, being itself bounded to the north and south by two great ranges of mountains or their branches. It is very diversified, and its importance is not sufficient to justify the lengthened details requisite for fully explaining the nature of its various parts. A very great part of it, or its borders, is uncultivated pasture, chiefly hilly; there are few considerable spaces destitute of water. The villages are generally small, but there are some large ones. The population of a given surface is greatest in Tugao; Khingul and Tugao belong to the Safees, a tribe of Afghans formerly more numerous than now, and lie to the north. South of them, in the present tract, are Ghiljies and some Khogeeanus. With the exception of Tugao, the khureef is the greater crop in this tract, and of it, rice and mash; and quantities of these are exported to Cabul. The rubbee harvest being here earlier than in Cabul, a portion of the crop is sold in that city to great advantage immediately before the harvest commences in the valley. With respect to the fixed inhabitants, agriculture is more important to them than pasturage, and cows are their chief live stock; but as the wandering Ghiljies from the west pasture their flocks here during a part of the year, it is a matter of doubt whether the district is to be called an agricultural or pastoral one. The numerous flocks of the Ghiljies consuming the grass, fodder bears a considerable price, especially in the cold part of the year; but in Tugao it is cheap. The natives live in houses which are flat-roofed, and timber is easily procurable in most situations, as is fuel from shrubs or branches of trees; and they drink from the numerous springs and streams. Provisions are cheap, but it is to be remembered that the population is small. Some sheep are bought from the Ghiljies. Besides provisions some pomegranates and other fruits are sent to Cabul before they come in

season there, and this district is distinguished by making a little silk. The crops are irrigated with few exceptions, and the quantity of rubbee, which is spring-sown, is but little. Within the district bullocks are the chief carriage. The climate is different in various places, but on an average is a temperate one.

Lughman.

188. Nature has divided Lughman into two districts,—the hilly, inhabited by Ghiljies, and the plain, inhabited by Lughmanees, a race of Indian descent. In both however there is abundance of water, timber, and fuel. The houses are flat-roofed, and the people drink from streams, or in the hilly tract from springs. Among the hills, black tents are used by some of the shepherds in summer. The temperature is much milder than in the Kohistan of Cabul; the country does not appear to be strong. The term Kohistan without the addition of any other to explain it, is not applicable to the hilly part of Lughman. Both there and in the plain the khureef is the chief crop, and rice the chief product. Among the hills maize is the next important to rice, but very little is raised in the plain, where, in its stead are raised sugar and cotton. In either quarter the quantity of wheat is but little, and barley is scarcely raised at all, rice straw being the chief food of the horses. Their horses are not numerous, and they have no camels. Within the district the chief carriage is by bullocks; among the hills the chief stock is perhaps goats, and after them cows, but in the plains the chief stock is buffaloes. Almost all the lands are watered, and chiefly from streams; the climate of the plains is accordingly moist, and agues common. The little rubbee raised is almost invariably autumn-sown. The cultivation and population are considerable. To the west however is an extensive waste, being a plain with small hills, and yielding little water; it is called the plain or desert of Shytan-goom. There are some large villages which may have 800 houses, but in general they are small. There is little fruit, and the chief trade is in rude produce. Wheat is imported from Bajour; ghee and sheep are brought

from the Ghiljies during their annual visits to the low country, when some of them pasture on the skirts of this country, and others pass through it. Sugar, cotton, and rice are exported to Cabul.

Koonur.

189. Koonur is an agricultural country, though there are certain dependencies of it to the north-west which are perhaps pastural, but they are of little account. The chief crop is the khureef, and the chief produce rice, part of which they export to Cabul, the country of the Upper Mihmunds, which lies east and south, and some other quarters. The population is considerable along the banks of the river. The capital, which is called Pushut, is equal to Jellalabad, and there are some large villages; but generally speaking the villages are not so large as in the plain of Peshawur. Into Pushut they import some wheat from Bajour. Ghee is brought from Deogul, and other hilly dependencies to the west of the river; sheep and goats from Bajour; but provisions in general are sufficiently cheap. In the valley cows are the chief stock, and after them buffaloes; the chief carriage is by asses. Fuel, fodder, and water are plentiful, and timber is procured in abundance from the west side of the river. There is also some pine in that part of the Upper Mihmund country which borders on Koonur, and in which the Syyaed of Koonur has influence. The people live in flat-roofed houses, and never use tents. Their fields are almost all irrigated, and their wheat and their barley, which are not great crops, are autumn-sown. The wood of the olive is much burned.

Bajour.

190. This also is an agricultural country, and cows the most important live stock; yet the pasturage, and number of sheep and goats is considerable. There are no black tents used; in many cases however the shepherds pass the summer under what are called koodies, which are made of mats supported by wood. These are erected at what the Afghans call bandas, which are pasturing stations remote from the village, and at them

is sometimes a few acres of cultivated ground, but no inhabitants in winter. This however is not the only meaning of the term. The fields of this country are generally lulm, though the quantity of irrigated is still considerable; part of the lulm has the advantage of water from khwurs. Wheat is a chief product, and in ordinary years more than a maund and a half of Delhi may be had for a rupee, and the exportation is considerable. The northern part however does little more than supply itself. It does not appear that any sort of provisions is imported into the country. The quantity of sugar raised is very small, and that article is imported chiefly from Jellalabad in return for wheat. Fuel, timber, and fodder are sufficiently plentiful, especially in the hilly parts, and water is every where near, the people drinking from springs and from streams; there are few wells. A certain shrub, by the Afghans called *tirkh*, is the chief fuel. Nawangee is perhaps the largest town, Bajour itself being much declined, and the former may be equal in population to one-half of Pushut. The villages in general are small or ordinary. On some of the frontiers are considerable spaces without fixed inhabitants, and the centre of the country is not so well peopled as the plain of Peshawur. Bullocks and asses are most used in carriage, and there are not many horses in the country. The wheat, ghee, and honey are good, and iron is one of the exports from the northern parts.

Kafirs.

191. This people live in a very rugged country, with numerous streams and springs; from the latter they drink, and also water their fields, which however are of little account. They derive their subsistence from their flocks of goats, which seem to be of a species superior to others known in these countries. Their cows and sheep are perhaps in equal numbers; wheat far exceeds all the other grains they cultivate; it is sown in the spring, and watered. Fuel and timber are plentiful, and their houses are constructed of wood. Some of their villages are large, containing 3,000 inhabitants, and on an average they are of an ordinary size; they are not fortified, but are situated in places difficult of access. They do not use tents in any season of the year, but

sometimes shelter themselves in caves. Within the country there is no traffic, but they exchange their ghee, cheese, goats, and vinegar for rice, cloths of various kinds, axes, but chiefly salt. Every thing is carried by men, and there is no camel, buffalo, mule, or ass in the country. They make wines and vinegars, both much esteemed, from the grapes of their own country, which are partly wild and partly cultivated; and uncultivated walnuts are abundant. This country can neither furnish supplies, nor be crossed by troops, except with the utmost hazard.

Punjkora.

192. The people subsist by tillage; their chief crop is the rubbee, and the greatest product, wheat; after which, barley. A small quantity of grain is imported from the valley of Buroul, which is in the northern part of the country of Bajour, but has its own chief, who is a Turkulanee. In Punjkora the lulm and irrigated lands are perhaps equal. The latter depends on springs and streams. But little wheat and barley are sown in the spring. Cows are the chief stock, but according to others, buffaloes; goats too are numerous, but sheep very few. The chief carriage is by bullocks and asses. The trade between Peshawur and Yarkund for the most part passes through this country, and Kasin Khan, the chief of Deer, which is the capital of it, and may have 500 houses, levies taxes on the merchants. The other villages are generally small, and some hamlets among the mountains have but five houses, or less. The mountains yield pines, which serve for timber and fuel, and also for torches. The mountainous parts are very thinly peopled, but that part of Punjkora towards the Ootman Khel and lower Swad is very populous. Tents are not used in any season of the year. Fodder is plentiful. There are few horses in the country.

Upper Mihmunds.

193. This is a hilly country, and its hills though not high, are often very rugged. Some of them yield pines, but more commonly they are covered with shrubs. The houses are sometimes thatched. The natives in general live in houses, but some tribes have black tents, and the same use is made of

koodics as in Bajour, and to a greater extent. On the whole this is an agricultural country. In some places sheep, in others goats, are the chief stock. Asses are numerous, and are the chief carriage, next to which are bullocks. In many villages a horse, mule, buffalo, or camel is not to be found. Timber on the whole is scarce, but fuel is plentiful, and there is no want of fodder. Some corn is imported from Bajour, Koonur, and the Dooab of Peshawur. The chief return made is in mats, which the natives manufacture from the Putha shrub (see paragraph 129.) From certain parts good ghee is exported to Peshawur. The fields are generally lulm, and the chief product wheat. The two crops are nearly equal, but perhaps the rubbee is the greater. The natives drink from tanks, streams, and springs. There is much hilly waste, of no use but as pasture for goats, and in some cases water is scarce. With very few exceptions the villages are small, and the population on a given surface cannot be great.

Ootman Khel.

194. This country is more difficult than even the preceding, which however it resembles in many particulars. It has more timber, its hills producing pine, and water is more plentiful. The chief subsistence is probably from the keeping of goats, and wheat the chief product. The villages are small, but if we believe the received accounts, the population is not inconsiderable, for this tribe is never rated lower than 10,000 families. They have never paid revenue, and have little amicable intercourse with their neighbours.

Khybur.

195. This is a rugged and unproductive tract, lying between Jellalabad and Peshawur. The natives live by tillage, the keeping of goats, and robbery. Water in many places is scarce, and no pines grow on the hills, which are nearly of the same temperature as those of the Upper Mihmunds. Fuel is plentiful, and there is sufficiency of grass, fresh or withered.

Teera.

196. This is an agricultural country, though goats be very numerous. The two crops are nearly equal; and on the whole,

the production is equal to the consumption. The houses are flat-roofed, and built partly of stone and partly of mud; no tents are used at any season of the year. The inhabitants are of the Afreedee tribe. West of them are the Shinwarees, in whose flocks are a greater proportion of sheep than among the Afreedees, and some of them live at times under black tents. Teera yields considerable quantities of good honey. The villages are small. The Afreedee tribe may be conjectured to be 55,000 souls; part of them live in Khybur, and that subdivision which is called Adum Khel live towards Kohat; and the northern Khutuks inhabit the continuation of their hills. Their country answers in most particulars to the description already given of that of the Upper Mihmunds.

Peshawur.

197. The plain of Peshawur is an agricultural country, and no space of the same extent in the Cabul dominions is equally cultivated or peopled. Upon the whole the khureef is the chief crop. In the plain of the Mundars the rubbee is the chief, and the like is true of that portion of the valley which the Khutuks possess. Perhaps maize is the chief crop, and it certainly is so in the vicinity of the city. The flour of maize is generally cheaper than that of wheat, in the proportion of at least three to two, and a certain mixture of it in the latter is supposed to improve it. The maize of Peshawur is remarkably white, and much esteemed. The rice of certain villages is exported to great distances, but the consumption of this article in that part of the valley which is subject to the king, is partly supplied from Lower Swad. In the same manner great quantities of wheat and some other articles of provision are brought from the country of the Mundars. The valley generally considered, does not support its own population, for the exports are inconsiderable, compared with the imports from Bajour, Chuch, Pothwar, and Kohat, especially the two former. Contrary to what is generally true of India, the khureef is commonly watered, and the rubbee commonly lulm. The watered lands depend on streams much more than wells. Jhulars are used in part by the Daoodzyes and Mihmundzyes. A severe drought is

inconvenient even to the holders of irrigated lands, as the Bard dries up unless showers fall from time to time, and a level lower than ordinary in the rivers, subjects the farmer to extraordinary labours. In the memory of people living there have been two severe dearths occasioned by the failure of the spring rains, and the calamity was increased by the resort of people from Chuch, whose dependence is on the spring or rubbee crop, cultivated lulm. The quantity of rice and wheat does not fall greatly short of that of maize. Chuna is raised in only one village, and horses here receive barley. Several grains well known in our provinces, among which the raggee, are not here to be seen. Jooaree is cultivated only to be cut green for the use of animals. Provisions are dearer than in Cabul, but fodder and fuel are cheaper. Lodging is very cheap in the town. On the whole, an army could be more easily maintained here than in Cabul. In the city they drink from wells, but in the valley in general they drink more from streams. Some of the Mihmunds and Khutuks have tanks, and near the foot of hills the natives use springs. Although the valley produces little timber, abundance is floated down from various quarters by water, and the wood work in the city is of pine. The city may contain 70,000 inhabitants, and is considerable. Of late it has declined, which has been owing rather to tyrannical proceedings, than to the decline of the government. The few wastes in this province are chiefly in the south-eastern part. Generally speaking, it is equal in cultivation to the good parts in India. The villages are about the same size as in the valley of Cabul. For carriage various animals are used, and the chief live stock is cows and buffaloes. In some places they burn cow-dung, in others, shrubs and the branches of trees, among which the olive is one.

Swad.

198 The lower part of Swad is included in the valley of Peshawur. It is a rice-bearing, well-watered, and well-peopled country. Upper Swad is mountainous, but yet tolerably well peopled, and there too the chief product is rice. Fuel, timber, especially that of the pine, and fodder, are abundant. The

chief stock is cows and buffaloes. The khureef is the chief crop, and tillage the chief source of subsistence. Cows, buffaloes, ghee, and rice are exported in return for indigo, coarse cloths, and manufactures.

Bhooner.

199. This too is an agricultural country, but grain is imported from other quarters, and the populousness is less than in Swad. The chief grain is raised to be kunganee, and lulm is more common than irrigated land. Many of the villages are large, but there are extensive tracts among the mountains without inhabitants. The mountains produce pine in abundance, and of course timber and fuel are easily procurable, but their natural verdure is said to be inferior to that of Upper Swad. This country is seldom visited, and the natives are very rude.

Pukhlee.

200. In Pukhlee agriculture is more important than pasturage, and the khureef is the chief crop. Rice is the chief product, and after it wheat. The produce seems to be about equal to the consumption. Most of the lands are irrigated from streams. The natives generally drink from springs, and live in flat-roofed houses. Timber, fuel, and fodder, are sufficiently plentiful, and ghee is very cheap. The chief stock is cows and buffaloes. Their sheep are of the light-tailed kind. The population is considerable, and the villages are of various sizes. There are certain districts individually of small account, commonly included in the revenue divisions, of which the above observations may not always be true.

Chuch.

201. This is an agricultural country, and of remarkable fertility. The khureef crop is of very little account. The rubbee is almost all lulm, and the chief thing cultivated is wheat, of which great quantities are exported to Peshawur, besides some other provisions also supplied. The few fields that are irrigated depend on wells, but the farmers are seldom at this expense except for raising tobacco, sugar, and other products of great value. They drink from wells, and some from tanks,

or the river Indus. Timber is rather dear, and therefore part of their houses are thatched. Their chief fuel is dung. The largest villages may have 350 houses; the others are much smaller, but they are numerous, and the population is considerable. Cows are the chief stock, and bullocks the chief carriage within the district; but for external trade mules are more used. The trade from Kushmeer to the west passes through this district, which also lies in the great road from Hindoostan to Peshawur and Cabul.

Huzara.

202. This is a small district, unworthy of much mention. Tillage is the chief subsistence, and the chief products are said to be wheat, barley, and mash. It has some streams from hills, and the amount of irrigated lands is equal to the lulm. Sheep are perhaps the chief stock. Provisions are not so cheap as in Chuch, and there are more wastes. The villages on an average have 80 houses. The natives drink from springs, rills, and tanks, and their chief fuel is shrubs.

Moozuffurabad.

203. Concerning this district, I have gathered but little, nor is it of much importance either from its produce or position. The cultivation is but little, and is irrigated. A little wheat is imported, and a little rice exported. Timber, fuel, and grass are easily procurable. The live stock is various, and the chief carriage, at least to Kushmeer, is on the backs of men. The pasturage is important.

Kushmeer.

204. This celebrated valley is admirably watered by streams and rills, which seldom fall below a convenient level. The quality of the soil is excellent, and adapted for the culture of rice, a grain which supports a great population; and the inhabitants are industrious and frugal. Very little of the produce is expended in the support of animals. There are few countries of the same extent so populous as Kushmeer. The capital cannot have less than 100,000 inhabitants, and is decidedly the largest city

in the Cabul dominions. On the mountains are fed numerous flocks of sheep, which are here a very valuable stock, yet are cows, on the whole, kept to a greater value. There are no buffaloes or camels. The chief carriage within the valley is by boats, and with most of the neighbouring districts by the labour of men. The quantity of rice produced far exceeds all the other grains and articles of food. A Kushmeeree eats wheat as a curiosity. That, like all other things, is sown in the spring. Saffron is cultivated lulm, and some of the gardens receive no water. The fruits and the palez are inferior in quality to those of Cabul, and the rice is of a coarse kind, but productive. Flesh is dear, timber and fuel cheap. The produce seems to be equal to the consumption and no more, nor could Kushmeer be easily made to yield supplies to an army not quartered in it, for the access is difficult, and carriage expensive. Fodder is plentiful, and especially rice straw, with which many of the poor thatch their houses; but in general the tops as well as the walls of the houses are of wood. The natives are proverbially unclean. The trade of Kushmeer is great, and already well known in Europe.

Rajiver, &c.

205. The southern dependencies of Kushmeer are well watered vallies, of which the chief produce is rice and maize, and the chief live stock cows and buffaloes. Wood and fuel are abundant, and the houses, whether of stone or wood, flat-roofed with timber. Provisions are cheap. The villages are small, but numerous in the bottoms, though there be much uninhabited space among the mountains.

Pothwar, &c.

206. Pothwar has a sandy soil of very poor quality, but a portion of all the three rains. Wastes are to be found, sometimes stony, sometimes broken ground, but on the whole the quantity of ground cultivated may excite surprize. The chief crop is the khureef, and bajra the bread corn of the people. The grain gives but a small produce on a given surface. There are some towns, but villages are small. Wood is dear, and part of the houses are thatched, part flat-

roofed. Some horses are bred here, and the number of live stock is considerable, so that fodder is dear. Grain is sufficiently cheap, and a small quantity is exported to Peshawur, to which they also send ghee. They and their live stock often drink from the same tanks. The number of small tanks is very great, and there are some wells in low situations for drinking. The few lands that are irrigated are chiefly watered from wells in hollow places, and are under tobacco, garden vegetables, and other valuable cultivation. Rice, sugar, maize, and chuna are scarcely cultivated, and more barley is raised than wheat. The chief fuel is cow dung, and the chief carriage, bullocks and mules. Though I have little detailed information concerning the remainder of this Dooab, to the south as far as the dominions of Mahmood Khan, I conceive that it answers in most particulars to the character now given of Pothwar.

Ghuznee, &c.

207. In this country the chief subsistence is from tillage. At the same time the pasturage is important, and being more mentioned in the neighbouring districts, the inquirer at first is led to suppose that it is the chief object. On the whole sheep are certainly the chief stock, but in some well cultivated parts cows are kept to a greater value. There are no buffaloes. The chief carriage is by camels. The quantity of khureef raised is very inconsiderable, and by far the greatest product is wheat, which is exported to Cabul; after wheat is barley, which in general is sown in the spring, in the coldest situations, for example, Khurwar. The wheat also, and indeed every thing cultivated is spring-sown. The quantity of irrigated lands exceeds the lulm, which itself has often the advantage of khwurs; the irrigated lands have water from streams and kharezas, never from wells. The quantity of palez is not very great, and there is but little fruit except in the environs of Ghuznee. The natives drink from springs, rills, and kharezas. Near Ghuznee is a dam still in good preservation made by order of Shah Mahmood Ghuznuwee; it is filled partly by rain, partly by springs and rills, and its water is used in irrigation. For fuel the natives use shrubs, the dung of cows, or that of

Fac-simile of No 3 Inscription from the pots of Behar communicated by W. Erskine

Inscription No. 3 from the fort of Benar in Nagree character.

1

रुषेधैर्य्यम् धर्म्यंकुरुनियम्यचक्रतुर्मनिस्स
त्वेव्ययादिकार्य्यम् अम्बकायपार्वत्यैच न्न
म्नक्रियारम्भेव्ययोधर्म्यः॥ म्रातुरेपायेयंदेयंती
र्यपरेषु॥परयात्रविरोधेन लब्धोपाप
क्षेत्रेपरिकृक्रियाकार्य्योत्याज्या॥
कार्य्याधिकारिक यात्रिकशिल्पकापत्या
प्रजाधिपलाविनः व्ययेपि ताप पीनका

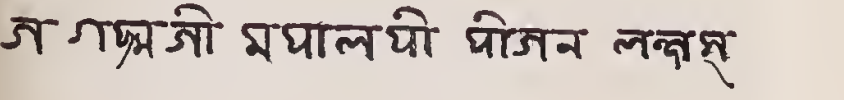
येमम अणयः चय विक्रयेण

2

क	तु	त	धै	न	ण	प	पा	बो	ब	बो
ka	tu	ta	dhy	na	ná	pa	pá	bo	ba	badhoo
क	तु	त	ध	न	न	प	प	ब	ब	ब
म	म्य	य	र	र	ल	व	श	ष	क्ष	
ma	mya	ya	ra	ra	la	va	sha	sa	kshya	
म	म्य	य	र	र	ल	व	श	ष	क्ष	
च		य	ज					स		
ch		ya	ja					sa		
च		य	ज					स		

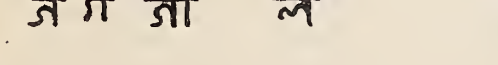
T. Black, Asiatic Lith. Press.

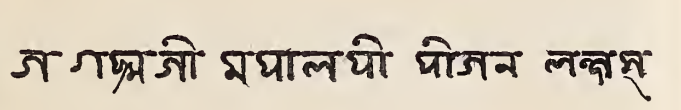
№ 1



№ 2

N.° 1





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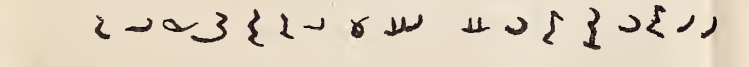

sheep, aeeording to eireumstanees. Timber is exeeedingly searee, and henee the houses are generally of the vaulted kind. A part of the population is in summer under tents, and in winter they flit to warmer elimates. Fodder is moderately abundant. There are considerable spaees without eultivation, and the population on a given surfaee is mueh inferior to that in the valley of Cabul.

Jajee.

208. This is a narrow valley, and its elimate is eold; the stream ultimately joins the Koom. The stream natives mainly subsist by tillage, and the ehief produets in their order are wheat, barley, riee, and pease. The lands are watered. The ehief stoek is goats. Timber, fuel, and fodder are abundant, and some provisions are exported to Cabul, to which they also send some planks of pine, about six or seven feet long. The earriage is on mules, for the nearest road to Cabul (with which they have most intereourse) is not praetieable for a bulloek or camel, it is ealled the road Goubund. The natives live in flat-roofed houses, and have no tents. The population is but small, and there is no large village.

Notice of an inscription in Behar, communicated by MR. RAVENSHAW, *as published in the May number of the Journal*, 1839.

The Editors of the Journal noted (vol. viii. page 347,) in announeing the communieation by Mr. Ravenshaw of eertain impressions of very ancient inseriptions from Behar, that "the most important and interesting of these impressions were so imperfeet, and eonfused, as to baffle the attempts of the Pundit Kamala Kanta, who aided Mr. James Prinsep in his valuable diseoveries. We allude partieularly to the inseriptions on the inverted column in the Fort of Behar."

I have now the pleasure of laying before the readers of the Journal a rendering of one of these inseriptions as deeyphered by Pundit Kamala Kanta Vidyalanka, and Baboo Hurrinboonath. They succeeded in giving this interpretation after a great expense of time and labour. The characters are of a elass

not hitherto met with, and I confess I cannot submit this first attempt to interpret them without considerable diffidence. The inscription is unfortunately destitute of both name and date; and does not, moreover, afford any clue by which the period of its record can be traced. It is however a very singular relic in itself, and the formation of an alphabet from the characters which compose it, may have important results, in leading to the easy perusal of other similar inscriptions, which I am not without hope a more diligent search may bring to light. The ancient history of *Magadha* and *Mithela* may come to be tested by evidence the most valid in the prosecution of such research, unpromising though the first fruits be, historically speaking, of what has been as yet attempted.

I may here, to save the trouble of reference, remind the readers of the Journal, that Mr. Ravenshaw reports the inscription to have been found on a broken stone pillar, situated in a reversed position a little to the west of the northern gate of the old Fort of Behar: its original site was according to tradition, in front of the gate. The following is the translation of the inscription, facsimile of which is given opposite page 65.

1. Be patient when angry.
2. Perform religious sacrifices as prescribed.
3. Be liberal in religious performances.
4. Be charitable to the weak and needy.
5. Riches should be spent in the celebration of rites in honour of *Siva* and *Parvati*.
6. The weak and destitute pilgrims should be supplied with the expenses of their journey.
7. Remove difficulties in the way of pilgrimage.
8. Exercise no oppression in any acquired (conquered) kingdom.
9. Encourage the officers of the state.*
10. Punish the oppressor of the (people), high or low.

The above affords little matter for speculation, save as regards

* The Pundit is doubtful as to the interpretation of this phrase.

the creed of the person who caused it to be inscribed, who was evidently not a Boodhist.*

Nos. 1 and 2 (duplicates) of the Behar inscriptions have been for the most part read by Pundit Kamala Kanta, but he is as yet unable to make out their full meaning. The character is not the same with that of No. 3, now published. As hopes are entertained of the arrival of that excellent orientalist, and able antiquary, the Honorable George Turnour, Secretary to Government in Ceylon, at this Presidency before the close of the present year, and as it is believed that he will make a tour through Behar and elsewhere, for the purpose of exploring still further the interesting subject of Boodhist antiquity, I trust to see these remains critically considered by a scholar in every way competent to pronounce upon their æra.

In the mean while, it is our duty to make the most of imperfect opportunities, in order to publish (submitting it to the judgment of abler critics) whatsoever casual research has put us in possession of.

I may here remark, that circumstances appear hitherto to have conspired to prevent more than a very cursory inspection of the remains of Hindoo monarchy in Magadha (Behar) and Mithela, (Tirhoot and Sarun.) Indeed Mr. Hodgson's brief, but interesting note of Simrown in the Turaee (vol. iv. Asiatic Society's Journal, p. 121) is the only description we possess of that ancient city, while the Behar inscriptions, one of which Mr. Ravenshaw's discoveries have enabled me to publish, have been copied in some instances with more haste than was consistent with correctness; and by the specimen now afforded, seem rather valuable as tending to excite further investigation, than as rewarding the search already undertaken. An ample and untried field is opened for inquiry in these regions, and it is sincerely to be hoped that no opportunity may be neglected of engaging in it.

* The injunction No. 8, with its allusion to a *conquered, and acquired territory*, might by conjecture be assumed to point to *Jara Sandha*, who having subdued the whole of *Prachi* "(the eastern region) as we read in the *puranas*, fixed his residence at Bali putra." (Wilford, As. Res. vol. v. p. 281.)

In the month of February last, Captain Burt of the Engineers, obligingly supplied the officiating Secretary with the fac-simile of an inscription taken by him at Pinjore; it was discovered there on the side of a well. The character is, as Captain Burt observes, different in many letters from all the alphabets given by Mr. James Prinsep; Kamala Kanta has therefore prepared an alphabet from it (No 4) and enabled me to give the accompanying translation.

"The monarch of Shonder Desh, who resembles Kamdeo in beauty and renown, having again in this manner fully enjoyed, will become ruler of other countries."

The meaning of the rest is not clear. I have endeavoured to trace the *Shonder Desh* herein mentioned, but ineffectually. The inscription therefore is, like the one above noted, valuable only philologically speaking. The neighbourhood of Pinjore to Phanesur might induce the belief that the region in which it was anciently included would not escape unnoticed in the Maha Bharat.

Account of Coins found at Bameean.—By Captain Hay, *1st European Regiment, Commanding 5th. Regt. H. M. S. S. M. Infantry.*

Bameean, April 7th, 1840.

Sir,

A doubt having been expressed whether "Demetrius" ever reigned in Bactria, the fact of one of his coins having been discovered in digging some trenches at Bameean, may be considered as likely to strengthen the opinion that he did: and as this coin I believe differs from the only one of his reign that is said to have been hitherto discovered, I take the liberty to forward you a sketch of it, in case you may consider it worthy of notice. The first "Demetrius" discovered was I think of gold, having upon the reverse the two horsemen so common and beautifully executed on the coins of Eukratides. I take these figures to represent Castor and Pollux, who were entitled, as Hercules is, to divine honours. My coin, which is of copper,

has been well executed, having on the obverse an elephant's head, with a bell round his neck, and without any legend: the reverse has what I take to represent a sceptre and ΒΑΣΙΛΕΩΣ ΔΗΜΗΤΡΙΥ. This Demetrius (called the handsome) son of Euthydemus, married a daughter of Antiochus the Great; fixed by Bayer 205 B. C.

I have also found at Bameean this winter a coin of Euthydemus, the father of Demetrius; but altogether so inferior in appearance to those handsome medals figured in Burnes's work, that it is evident mine must have been struck at a provincial mint, and represents Euthydemus merely as Soter, not Basileus. The letters are badly executed, and it will be observed that the Epsilon is used reversed where in Burnes's coin an Eta is substituted, and the H is used instead of Θ. Thus ΕΥΗΓΔΗΜΟΥ

The reverse has Hercules and a Pehlevi legend, which is not sufficiently clear to distinguish. These are the only true Bactrian coins that have been discovered since our sojourn at Bameean, and both are in my possession.

As the coins of Antimachus do not appear common, and I do not remember seeing one figured, I send an impression of a very perfect silver coin which I procured from a cafila on its way from Balkh: from the same cafila I was fortunate enough to procure a large and very perfect silver Eukratides, which I think has been described in a former number of the Asiatic Society's Journal. I have many other coins of Apollodotus, Menander, Pantaleon, Lysius, Ermaios, Spalirisces, Azos, also coins of the Indo-Sythic series, Kadphices and Kanerkas, but I fancy all these appear in Masson's list of discoveries, and are by this time I hope under the able description of H. Wilson.

I remain, with respect,
Your obedient servant,
WILLIAM HAY.

Note on the above—By the Officiating Secretary.

The discovery of the copper Demetrius at Bameean is valuable, as throwing (if the evidence may be taken as sufficiently strong) a new light upon the history of that prince. Mr. Schlegel (Asiatic Journal, vol. ii. p. 408,) in his Epitome of the history of the later Bactrian kings has adopted the opinion that, "Demetrius did not succeed Euthydemus in Baetria." He holds that Demetrius governed the provinces situated along the lower Indus after their subjugation by his father Euthydemus: the title given him by Justin "*King of India*," favours the supposition. Professor Lassen of Bonn, however, in his "Chronological Table"* of Baetrian monarchs, notes as follows, "Demetrius succeeds his father *in Bactria* about (B. C.) 185," and he assigns the usurpation of Bactria by Eukratides, and the consequent retirement to Arachosia of Demetrius to the year 175, B. C., thus placing this occurrence six years after the period noted for it by Bayer (B. C. 181.) The discovery of a coin of Demetrius at Bameean would appear to bear out the Professor's position, viz., that this prince actually exercised regal authority in Bactria in succession to his father.

I venture to point out this (apparent) proof to those valued contributors to the Journal, who are now in Afghanistan, and to request that they will turn their attention to the elucidation of what has been well termed "one of the darkest parts of Bactrian history" for further investigation of the value of what has now been advanced. The coins of Demetrius are very rare; I do not indeed believe that more than five have been hitherto found, and all, (acknowledged as his) but Capt. Hay's, have been silver, similar in device to that figured in the Asiatic Journal, vol. iv. P. XXV. On this copper Demetrius I am inclined to risk a theory as regards a very interesting and hitherto obscure coin, noted (Asiatic Journal, vol. iv. P. XXV. Fig. 4.) as the coin of "*Mayus*," a supposed monarch, two of whose coins exist in the Ventura collection. "This," says Mr. James Prinsep, "is an entirely new name; nor can it be read as a Greek word in its present shape, although the characters are perfectly distinct on the coin, and the style of engraving

NOTE.—The chronological table, with some extracts from Professor Lassen's work, were translated for the Honble Mr. H. T. Prinsep by Mr. Piddington. I have made arrangements with a gentleman (Dr. Roer,) fully competent to the task, for a translation of the whole work, to be published in the Journal of the Society. It will be highly useful to Indian numismatologists, and as the work, even in the original language is not procurable in this country, I know no better method of making it public, than by translation in the pages of that Journal, which under our Secretary's able management supplied the Professor with some of the most valuable material for his work.

corresponds with the early, and pure Greek types." He goes on to suggest that could "*Mayus,*" be read with the third letter as a *gamma* it might denote the union of the office of chief priest with that of king, and identify the holder of the title with Menander, or Demetrius, on the authority of the elephant's head found on the coins of both those monarchs, and prominently exhibited on the one under consideration. The exact similarity of the upper Demetrius in the possession of Capt. Hay to this coin of a supposed, "*Mayus,*" in all except the name of the monarch, inclines me strongly to believe that MAYOY, which in the first-found coin holds the place of the ΔEMHTPIOY of Capt. Hay's, is merely a synonym, a title, or attributive epithet, whereby the prince was so particularly distinguished as to induce his contemporaries to mention him, and even allow his coin to be struck, under that appellation alone.

Under the strong impression of this idea, I turned to examine the opinion of critics of more authority, and found (Journal des Savans, Mai, 1836,) that my own conception had been anticipated in favour of another Bactrian prince, Apollodotus, by Mons. de Raoul Rochette, in a singularly ingenious paper on this "*Mayus*" coin.

"All," says this able critic, "is extraordinary, and all new as regards this medal; another specimen of which I know not the existence of, nor at least do I know that it has been noted, described, or published. The workmanship is quite peculiar, and belongs to a Greek æra of some remoteness: the form and proportion of the letters indeed unite in assigning to it a manufacture at least contemporary with the reign of Apollodotus. *The elephant's head,* being a symbol used on the coin of Menander and Apollodotus, suits the assumption well enough, and in this instance, I observe that *the bell,* which may be seen suspended from *the elephant's head* is a peculiarity presented to us also by the little bronze of Menander, published by me, but (which peculiarity) I omitted observing on it. In making up for this omission, I would say, that *the bell* is always seen, even on Roman denarii, hung to *the elephant's head,* which forms one of the symbols of the Cæcilia family, nor need I except the similar head, serving as ornament to the Macedonian buckler-symbol on the coins of Metallus Macedonicus. This peculiarity which escaped Eckhel, has been carefully brought to notice by M. Cavedoni.

"But the circumstance of most importance offered by our medal, one which makes it a sort of numismatic problem, is the legend, the name of *the king Mayus,* of a form so foreign to the Grecian language inscribed on so purely Greek a relic,---a name elsewhere so completely unknown, the place of which we know not how to establish by the aid of

any refercnee furnished by history, in its proper order in the scries of kings of Baetria. Perhaps even one might almost doubt whether this medal does form a part of Baetrian numismaties, as the symbol of *the elephant*, found on the eoins of the kings of Syria, does not afford of itself means for determining the matter, and that eonjeeture, when the subject be but one or two medals, is a still more insufficient index. The absenee of a Bactrian inscription on one of these medals, almost all bilingual, would be again a reason sound enough to doubt its belonging to the same numismatie family. In spite of this, I think I recognize a Baetrian medal here by a characteristie mark, which seems to me deeisive, in the monogram found on the square drachma of Apollodotus, and which, added to the symbol of *the elephant's head*, used on the little bronze of Menander, appear to guarantee this coin as the produce of a Baetrian mint. As regards the prinee whose name our medal bears, whose existence and whose reign it alone, among the ancient relies which remain to us, reveals, it would be superfluous to give oneself up to conjecture, which ean rest on no solid base. However, I eannot help remarking that this name affords very nearly a transcript of both the Zend and Sanserit words signifying *moon*, *Mao*, with the sign of the Greek genitive, MAYOY. To bear out this observation, I may call to mind that the Baetrian medals of the Indo-Scythie series, belonging to the reign of Kanerkes, present us ordinarily on the reverse of the figure of *the standing prince*, a *personage*, the *head surrounded by a radiated halo*, designated at times by the Greek word HΛIOΣ, *Sun*, at other times, and most frequently, by the Zend words MIΘPO or MAO, *Sun* or *Moon* indiseriminately. These medals, lately published by the Asiatie Soeiety of Bengal, with learned observations on them by Mr. James Prinsep, are found also in almost all their varieties in the eollection we owe to General Allard; and the notion which we thence derive of a personification of some deity of the Baetrian mythology, answering at once to both the *male* and *female* of light, and designable either by the term *Mithro*, or by that of *Mao*, according as the *male* and *female* principle of this androgyne deity prevailed in its representation, appears susceptible of no sort of doubt. This is the same idea which produced the figure of a *god Lunus*, so common on the Græco-Asiatie eoins, in the likeness in which he is most commonly represented as *a young man*, crowned with a *radiated tiara*, with a loose robe on his shoulders, and mounted on *a horse*, an animal consecrated in all ancient religions to the *Sun*; and the *god Lunus* must have answered to the lunar genius *Maho*, of the Zendish works. This same idea is it, which is again found under another form in the *goddess of Comana*, a goddess equally androgyne, the worship of whom,

established in Pontus from of old, may be traced indisputably to an Asiatic origin, and whose real name Μας, as given by Strabo himself, a native of those regions, is precisely the Sanscrit name of the *Moon*. This being established, it might not be impossible that the name MAYOY, joined to the word ΒΑΣΙΛΕΩΣ, on our Bactrian coin, might be an equivalent for the name *Apollodotus*, suggested perhaps by the same motive which had caused the choice of the figure of *Apollo* as type of the coin of Apollodotus. Under this hypothesis, the various numismatic indices which made me assign our medal to the epoch of that prince, would be fully borne out as true by gaining thus their full force. This is however no more than a conjecture, which I submit most deferentially to our philologists in the tongues of India, through whom alone, one may hope for the solution of this curious problem."

I confess this does not seem to me to be a question referable for decision to a philological test, of the nature above specified. The word MAYOY may indeed be derived in the manner suggested by Mons. de Raoul Rochette in the above ingenious paper, but *with the Caduceus on the coin*, the application of it would I think be more readily made to Mercury, than to the "androgyne deity," or "Deus Lunus," whom the writer points to as affording in the analogous shape of Apollo, an equivalent to Apollodotus. The Caduceus is too remarkable an emblem to be mistaken as regards its reference: it has been found on the coins of this series, only in juxtaposition with the name of Demetrius, and with the mysterious word, Mayus; this coincidence enables me to suggest a direct mythological meaning to the unknown term, without attempting to interfere with the philological exposition of Mons. de Raoul Rochette. Mercury, whose parentage is (Sophocles Electra, "μαιας παις" Eurip. Rhesus, and Helen, "μαιαδος τοκος") ordinarily noted with direct reference by Greek poets to his mother, is named by a purely classic author (Eurip. Medea v.759) as ὁ μαίας ἄναξ, a poetic license, in which however may be found an approximation to a masculine *matro*nymic, applicable to the deity, and corrupted in after years, under the impure dialect of a distant military colony into the word before us. Thus allowing the philological theory, I am inclined to find in MAO the original of Maia, the fabled mother of Mercury, and to detect in this masculine adaptation of her name, not an androgyne deity, but the

"—— Almæ
Filius Maiæ ——"

himself, especially as the peculiar emblem of the god occupies the reverse on which the legend ΜΑΥΟΥ appears. There are, I think, sufficient reasons against admitting the application to Apollodotus of this attributive epithet, independently of any force which may attach to what has been above stated, in as much as we already know Apollodotus by two distinct peculiar cognomina, assigned to him in a form, which as Mr. J. Prinsep observes, affords in its emphatic singularity a sort of phænomenon in numismatics, I mean, in the use of the conjunction Και between the words in the legend ΑΠΟΛΛΟΔΟΤΟΥ ΒΑΣΙΛΕΩΣ ΣΩΤΗΡΟΣ ΚΑΙ ΘΙΛΟΠΑΤΟΡΟΣ. (Vide vol. ii. As. Jour. p. 406.) Now it is possible that instances may be adduced in which *a number* of different attributive epithets are to be found applied to some distinguished personage in Grecian history, but the course of ordinary experience is against this; and one may reasonably conclude (even supposing no other argument existed to disprove the claim of Apollodotus to the title) that ΜΑΥΟΥ would not be assigned to him on any coin in addition to his other designations, (vide vol. ii. Asiatic Society's Journal, Pl. VIII. vol. iv. Pl. XXV.) I would on the above grounds then, deny the conjecture of "king Mayus" being identifiable with Apollodotus, though I will again avail myself of part of the argument of the able conjecturist to assign the title to its real owner.

In the extract from the *Journal des Savans*, above translated, very sufficient reasons have been assigned for considering the *Mayus* coin as contemporaneous in its manufacture with Apollodotus; but, not being a coin of Apollodotus, the fact of its having been struck at an epoch almost identified with his own, gives me a stronger right to assign the coin to one, whom Mr. James Prinsep, (vol. ii. Asiatic Society's Journal, p. 410,) conceives may have been the elder brother of Apollodotus, Demetrius in fact, whose name we have impressed upon a coin precisely similar in all but the presence of that name, to the *Mayus* medal, on which so much ingenious conjecture has been expended. The elephant's head with the bell, is common to both, the circular ornament, the monogram, and, lastly, the remarkable type of the Caduceus, are found exhibited in exact fac-simile, leading to the natural conclusion, that the ΒΑΣΙΛΕΩΣ ΜΑΥΟΥ of the one is the ΒΑΣΙΛΕΩΣ ΔΗΜΗΤΡΙΟΥ of the other. The title, or synonyme rather, may very probably have been with Demetrius as with Mercury, a *matro*nymic, and bestowed perhaps in adulation or in fondness on the princely offspring of some mortal Maiæ.

Suppose this fairly proved, and another clue is found to the authentication of the history of Demetrius; since, the Mayus coins having been

found in Bactria Proper, stronger grounds are elicited for believing that he did succeed Euthydemus in his hereditary possession of the integral kingdom. The rare occurrence of the Mayus or of the Demetrius coins, seems to suggest that he was very shortly after his succession ejected by Eucratides. Mr. Schlegal, who assumes that he did not succeed his father in Bactria, but who acknowledges his ejection from his paternal dominions, and his retirement into Arachosia, must allow that to be ejected, he must have once possessed.

As governor during his father's life time, of provinces along the Indus, the elephant's head would be an appropriate type for the coin struck by Demetrius. The bell, which appears to have attracted so much attention in Paris, is in shape and proportion similar to the large bells now in common use with native chieftains in Upper India, saving with a rope on either side the elephant, instead of about his neck, as in the coin. The object of the modern custom is to regulate the pace of the animal by the alternate sound of the swinging bell; the ancient practice originated, perhaps, in some similar fancy.

Should any of our contributors see reason to think that these observations have really made out the point they are intended to establish, may I hope that the idea of further success in elucidating fact as regards a very interesting, but most obscure epoch, will encourage them to make public the fruits of their research? I have requested Captain Hay to favour me with drawings of the most remarkable coins in his collection, and am most sorry to say that I have been as yet unable to have lithographs taken from the impressions in sealing wax which he has sent me. H

Memorandum on the differences of the Meridian of the Observatory at Madras and the Flag-Staff of Fort William and of the Cantonment of Futtehghur in the Doab.—By Colonel J. A. Hodgson, *late Surveyor-General of India.*

I purpose in the following remarks, to give an account of the above differences, as deduced from eclipses of the first satellite of Jupiter, made by myself, and to add some notices regarding the modes of determining the longitudes, and latitudes, of places in Asia, which may be found useful to the officers of this army, now serving in places far distant from each other.

The Indian Government has for upwards of fifty years maintained an Observatory at Madras, but until 1829, it was

on a small scale, with an astronomer and a few native assistants; since that time, the establishment has been improved, and valuable instruments erected, of which most important use has been made by Mr. Taylor, the present astronomer to the Honorable East India Company.

In Bengal, we have not had any regular astronomical establishment, but many valuable observations have at different times been taken by the officers of the Bengal Army, employed on geographical and other duties, as well as by gentlemen of the civil service, in different parts of the country, for their own satisfaction.

With regard to the longitude of the Madras Observatory, it was very assiduously investigated for many years, by the late astronomer Mr. Goldingham, as may be seen by the Madras Observatory papers, and others published by him, and in his Memoir laid before the Royal Society, in which he has recorded the observations made of the eclipses of the satellites of Jupiter. Until the year 1817, the meridian of the Observatory was accounted to be 5h. 21m. 14s. East; but afterwards Mr. Goldingham had reason, by correcting his numerous and valuable observations, by the errors of the tables, and from some emersions and immersions of the 1st and 2nd satellites correspondent with observations made at Greenwich, to estimate his Observatory to be 5h. 21m. 9s.·4.

In the 1st. volume of the Madras Observatory Papers, Mr Taylor gives for his meridian,

	h.	m.	s.
By Jupiter's first satellite	5	21	1·00
By transits of moon and stars....			3·77
Mean.	5	21	2·38

but in the 2nd. volume (page 113) the astronomer, from more numerous transits, *compared* with those made at the Cambridge Observatory, finds.—By 14 transits of first limb, and stars, ... 2nd ditto, 2nd. ditto,

	h.	m.	s.
	5	20	30·56
			33·60
These *reduced* to Greenwich, give for Madras Observatory, ...	5	20	55·62

which Mr. Taylor thinks may be 8 or 10 seconds in defect. Mr. Taylor, who has now, I believe, gone to England, will no doubt find there, numerous observations with which he can *compare* the above, and the subsequent observations he has made, and will be able to put to the test, the value of the lunar transits, when he has the comparisons from the 1st. and 2nd limbs of the moon in *equal and greater numbers;* he will also get correspondents for his numerous sights of Jupiter's satellites: we shall *then see*, how far the two modes, by the transits and by the satellites, agree with each other. It is an inquiry of interest, but in the interval, I think we may fairly take the mean of what I have above stated, thus—

	h.	m.	s.
Mr. Goldingham's 1st. and 2nd satellites,	5	21	9·40
Mr. Taylor's 1st. satellite and lunar transits			3·77
Ditto, 2nd. satellite of ditto, ditto,	5	20	55·62
Mean Madras Obsy.	5	21	02·93

The following series of nine immersions, and eight emersions of the first satellite is selected from my notes, as having been made under the circumstances most favourable to accuracy. Those circumstances are, that the immersions and emersions be *equal in number;* these are nearly so—it is proper that they should be taken with *telescopes of the same description*, at either place; these were *so* taken, the telescopes being those of Dollond, of 45 inches focal length, aperture 2 inches ·7 and power 70 to 75;—that the *same* person observe at each place; I myself did so at the Surveyor-General's House at Chowringhee, Calcutta; and the *same* individual, I believed, took the eclipses at the Madras Observatory—the satellite was the *first*, which by reason of its quicker motion, gives the best results. The circumstances of climate, and altitude of the planet, did not very materially differ at Calcutta and Madras. When these conditions are attended to, a moderate number of corresponding sights will give a better difference than a far greater number would under other circumstances. I have the dates and particulars of all these eclipses, but it would take too much space to insert them here; they were taken in 1821, 1826, 1827. The differences in time, reduced to the Flag-Staff, are—

Emersions.		*Immersions.*	
m.	s.	m.	s.
32	23·70	31	57·90
32	38·30	31	52·70
32	27·00	31	28·00
32	08·00	32	08·29
32	12·70	32	09·51
32	27·10	31	56·09
32	51·50	32	11·76
32	26·10	32	08·91
32	17·70		

	m.	s.
Mean of 9 emersions, ...	32	25·79
Ditto of 8 immersions, ...	31	59·08
Mean of emersions and immersions of the 1st. satellite, ...	32	12·4
The mean before stated for the Madras Observatory, ...	h. 5 21	2·9
	5 53	15·3
Longitude of Flag-Staff, Fort William,	88° 18′	45″

I must mention, that I should have taken a greater number of eclipses of the satellites in Calcutta, had I not been absent from it on duty, in the North-west provinces, from 1822 to the rains of 1826. To several of my observations of eclipses in 1821, I found correspondents, in the series taken by the late Colonel Beaufoy, at Bushey Heath; they give for the Flag-Staff 5h. 53m. 10s.3. I sent to the excellent astronomer at the Cape of Good Hope, the late Rev. Fearon Fallows, the particulars of my observations, requesting him to give me correspondents, if he had any. I may here most conveniently make an extract from his reply (dated 1st September, 1823) to my letter. He says, "Amongst the very few eclipses which "had been taken, I could not find any corresponding to the date "of your observations, which I am happy to say bear the stamp "of being taken with great accuracy. As the calculations of "these eclipses are not made from the most approved tables, "(De Lambre's,) and as you may be desirous of seeing your result

"compared with those tables, I shall take the liberty of selecting "those which appear to me to have been taken by the same "person, and with the same telescope. The longitude of the "Surveyor-General's Office at Calcutta, from comparison of obser- "vations, made of Jupiter's 1st satellite, with De Lambre's tables.

Date.		Emersions.			Date.		Immersions.		
		h.	m.	s.			h.	m.	s.
1821	Nov. 22	5	53	1·6	1822	Oct. 10	5	53	6·4
———	Dec. 8			12·3	———	Oct. 24	5	52	55·4
1822	Jan. 7			8·5	———	—— 26	5	53	12·0
———	—— 16			5·7	———	—— 31			6·5
———	Nov. 27			10·2		Nov. 18			1·0
———	Dec. 13	5	52	56·1					
		5	53	5·73			5	53	4·26
———		5	53	4·26					
———									
	Mean	5	53	5·00					

"The mean is about twelve seconds of time less than you "make it by the Nautical Almanac, yet the accordance between "the means of the emersions and immersions, is truly sur- "prising." These observations, with particulars of the transit of Mercury, Mr. Fallows sent to the Admiralty. Though the result deduced by him is *not* from corresponding sights, yet the corrections made by so skilful an astronomer, and his opinion of their value, may be thought to render them worthy of some notice. In 1821 and 1822 the Surveyor General's Office was at No. 8, Russell Street, Chowringhee. The reduction to the Fort Flag-Staff is four seconds of time, it will therefore, by these observations, be in 5h. 53m. 3s.1 = 88° 15′ 15″.

If the above eclipses were in sufficient number to entitle them to a place on the mean, it would give for the Madras Observatory, 5h. 20m. 59s·34.

Another mode by which I endeavoured to find the meridian of Fort William, was by the transits of the moon's limbs over the meridian, compared with those of stars differing little from her in right ascension and declination; for this purpose,

on my return to Calcutta in 1826, I instituted a series of these observations in the small temporary observatory on the roof of my house, No. 37, Park Street, Chowringhee. The transit telescope, of thirty-four inches focus, had five wires, though not large, was good, and firmly mounted, and the clock and other astronomical apparatus, were of the best kind. The transits were taken by the native assistant, the Syud, Mhir Mhosin, a most respectable man and steady observer; the calculations were made in my office, immediately after the transits were taken, by the computer, Mr. Vincent Rees, aided by the young men, apprentices, in the Survey Department.

The whole of these calculations in detail, were inserted in lithographic forms, and were forwarded by the Government to the Royal Astronomical Society of London. They are contained in two large folio volumes. I need here only mention the results.

From 19*th Nov.* 1826, *to* 13*th Dec.* 1827.

	h.	m.	s.
82 transits of stars and moon's preceding limb	5	53	29·43
82 transits do. do. following limb ..	5	53	12·89
Mean reduced to Flag-Staff	5	53	21·16

These results, it is to be remarked, are deduced from the data in the *Nautical Almanac*, and *not* from *comparisons* with observations made at Greenwich, from which a better determination would be obtained, if so great a number of transits had been taken at Greenwich or Cambridge; but that is not likely to have been done in so short a space of time, in the cloudy climate of England; because, results from those transits, though very numerous, are only merely from *calculation* from the Nautical Almanac. I have thought it better, *not* to allow them a place in the general mean; though I did so in some observations I gave to the Marine Surveyor General, Captain Ross, and which, with observations he had taken, gave for the Flag-Staff 5h. 53m. 20s·7. as he has mentioned, in the notice published by him in 1829. It seems, I think, likely, from the

tendency of Mr. Taylor's subsequent operations at Madras, that the meridian of Fort William Flag-Staff will prove to be less than the above.

This method of determining longitudes, or rather *differences* of longitude, has been much recommended of late by astronomers; and doubtless it is as capable of great accuracy, when a long series of corresponding sights can be taken in fixed observatories; but to those to whose lot it falls, for the most part, to determine new positions,—to military and maritime officers, and to scientific travellers,—it will not I fear be found so generally convenient, as it may appear to be. It is requisite, that the transit instrument be good, and well and firmly fixed, and that the sights be most carefully made, for an error of only two-tenths of a second of time, on the observation of the transit of the moon's limb, will on her mean motion cause an error of six seconds of time in the longitude. To duly estimate a small part of time requires much practice, and it is difficult to be sure of the precise instant when the moon's *preceding limb* touches the wires, it is *perhaps* rather less so of the *following* limb leaving the wire, but a mean must be taken; add to this, that except to those, whose sole occupation is in a fixed observatory, it would be very irksome to get through a long series of lunar transits, at the varying periods of three quarters of an hour's difference of time, every night. On these accounts, I hope the satellites of Jupiter (especially the first) will meet with more favour than has been allowed to them lately, in some notices on practical astronomy. I believe that by their means, the meridian of *more* distant places have been nearly settled, and more useful additions, in that particular, made to Geography, than by any other mode; and from long experience, I find that great dependence is to be placed on the results, *provided* the requisite conditions, which I have mentioned, are attended to. In this extensive country, we little need insist on the important consequences of well determined differences of longitude. Moderate distances, can be best laid down from *survey*, and referred to some known meridian; but it frequently happens in the emergency of service, that officers even on a survey, are detached to a great distance from their field of operations, with

which their new positions cannot be connected, *except* by astronomical means. This was particularly the case, when the revenue surveyors in the North-western provinces were suddenly ordered to join the armies on the eastern frontiers, in the Burmese war. I was at that time the Revenue Surveyor-General. With those officers, though they were withdrawn from my superintendence, I continued to keep private correspondence, and I particularly requested them to make as many observations of the satellites as they could, that I might compare them with those I made at Futtehghur; and to the skill and zeal of Majors Bedford and Wilcox, in Assam, to Major Pemberton, in Munnipour, of Major Fisher, in Sylhet, Capt. Wroughton in Arracan, and the late Capt. Grant, at Prome, (all officers of the Bengal Native Infantry Regiments,) I am indebted for many data, by which the geography of the eastern frontiers has been so much improved. It may serve to give an idea of the extended field of their operations, merely to mention that the observed difference of longitude taken by me at Futtehghur, and Major Wilcox at Suddia in Assam, by the 1st satellite, was in time, 1h. 4m. 15s., or 964 miles of longitude.

When places like Suddia, Munnipour, and others at such great distances, and to which there had been no opportunity of extending geodesic surveys, can have their positions assigned to them exactly in latitude, and within perhaps two to three miles, or indeed I think within less, by a few correspondent observations of the satellites, they serve as starting points, from which to originate more detailed and local surveys, in those new countries. As an example,

I will now give the differences of meridian of Futtehghur and Madras Observatory. My house at Futtehghur was on the high right bank of the Ganges, and nearly in the rear of the left of the Native Infantry lines, and in latitude 27° 21′ 37″.

	Date.	Set.	Im. or Em.	Madras time.	Futtehghur time.	Difference.
				h. m. s.	h. m. s.	m. s.
1824	Dec. 21	1	Immersion	11 36 41 ·7	11 33 56 ·3	2 44 ·8
——	—— 9	—	Do.	13 29 57 ·8	13 27 03 ·8	2 54 ·9
1825	——	—	Do.	17 16 46 ·7	17 13 32 ·3	3 13 ·4
1825	Jan. 10	1	Do.	10 00 35 ·6	9 57 17 ·3	3 18 ·2
——	—— 26	1	Do.	8 15 28 ·6	8 13 13 ·0	2 15 ·6
				5 Immersions	Mean	2 53 ·3
				h. m. s.	h. m. s.	
1825	Mar. 22	1	Emersion.	7 17 05 ·7	7 14 42 ·0	2 23 ·7
——	——	1	Do.	9 11 32 ·5	9 09 20 ·0	2 12 ·5
——	April 5	1	Do.	11 06 23 ·0	11 04 19 ·0	2 04 ·0
——	—— 21	1	Do.	9 25 07 ·4	9 22 59 ·0	2 08 ·4
——	—— 28	1	Do.	11 20 15 ·6	11 18 03 ·0	2 12 ·6
				5 Emersions.	Mean.	2 12 ·2

Mean of Immersions and Emersions.			2 32 ·7
Madras Observatory.	5	21	2 ·9
Futtehghur.	5	18	30 ·2

The above were all taken with Troughton's 46-inch telescope, power 64, and *by myself*, except one immersion on the 9th December, which was observed by Mr. William Rix James, one of my best sub-assistants. At the same time observations were taken by several young men, apprentices in the Revenue Survey Department, in my presence; but I did not allow of any communication between them,—each gave to me, on the spot, separately and silently, the time at which he noted the phenomenon.

The following are the differences given by numerous immersions and emersions of 1st satellite.

		m.	s.	
Dollond's 64-inch telescope, power	100 ..	2	28	·7
Troughton's 46 Do. Do. power	64 ..	2	29	·2
Dollond's 45 Do. Do. ..	75 ..	2	32	·4
Mean, ..		2	30	·1
	h.			
Madras Observatory, ..	5	21	2	·9
Futtehghur, Do.	5	18	32	·8

These were the best telescopes, and used by the steadiest observers, but not always the same instrument, by the *same* person. The mean of these, with that of *my* individual sights, give 2m. 31s. ·40 for the difference, which must be near the truth, and for my station 5h. 18m. 32s. ·37, or 79° 38′, that is, if the meridian of Madras be correctly settled.

I may further mention, that I took and compared with the Nautical Almanac six immersions, and an *equal* number of emersions of the 1st satellite—they give,

	h.	m.	s.
6 immersions,..	5	18	32 ·7
6 emersions, ...	5	18	38 ·3
Mean, ..	5	18	35 ·5

All taken with Troughton's 46-inch telescope, power 64, and by the *same* person.

I have extended these remarks to a far greater length than I intended, but perhaps some notice of another mode of investigating the longitude, may be useful to the officers of the Bengal army, who are serving with our regiments from Afghanistan to China. This is the well known mode of lunar distances from the sun and stars, which has not been so much used on land, as it might be, and with very great advantage, in the clear atmosphere of Asia; frequent opportunities of seeing the moon and stars and sun occur; the mode of operating is not difficult, and the instruments required are easy of carriage, and do not require any fixed supports. The calculation is rendered simple, and the results satisfactory, by means of the correct data in the Nautical Almanac; with these, and that most excellent of all instruments, *Troughton's reflecting circle*, any officer may, with a little practice, do good service to geography. I wish it to be understood, that it is not by the *sextant* that we are to look for such results, it being only a second best instrument, but from the *circle*, which is, though a little heavier, equally, nay, *more convenient*, in use, than that imperfect part of a circle, the sextant; which should never be used on land, nor at sea either, if satisfactory longitudes are hoped for; and where are they more required?

As Troughton's directions for using his circle are not universally known, I will here extract from them a few lines, in which he plainly states its advantages, when compared with the sextant; they are chiefly these :—

"The observations for finding the index error, are ren-
" dered useless; all knowledge of that, being put out of the
" question, by observations both forwards and backwards. By
" the same means the errors of the *dark* glasses are also cor-
" rected, for if they increase the angle one way, they must
" diminish it the other, by the same quantity. This also
" perfectly corrects the error of the horizon glass, and those
" of the index glass, very nearly. But what is of still more
" importance, the error *of the centre* is perfectly connected,
" by reading the three branches of the index, while this
" property, combined with that of observing both ways, proba-
" bly reduces the errors of dividing, to *one-sixth part* of
" their simple value. Moreover, angles can be measured as
" far as one hundred and fifty degrees, consequently the sun's
" double altitude may be observed, when his distance from
" the zenith is not less than fifteen degrees, at which alti-
" tude the head of the observer begins to intercept the rays of
" light, incident on the artificial horizon, and of course if a
" greater angle could be measured, it would be of no use
" in this respect."

Mr. Troughton has not noticed a farther great advantage, in there being no need to take the index error of the circle, as there is with the sextant; the finding this error with the *latter*, as it is generally done by measuring the sun's diameter, on each side of the zero, is well known in these hot countries to be a most painful, as well as a tedious and uncertain operation, and we measure only on a small part of the arc the glaring disk of the sun, through the stained glasses, which we see under a very different degree of brightness, from that under which we take the contact of the moon and sun or stars, and this index error *ought*, with the very best sextant, to be rigorously examined at *each* observation.

With the circle the correction for the zero point is included in the *observed* distances on both arcs, and given on six parts of

the circumference; and what is of great consequence, the observed objects have the same, or very nearly the same, degree of light, so that the eye has not to change its focus and condition; besides, if the reading of the three indexes take up more time, it is a very little more than the reading of one, it is amply repaid by the time gained, in not being obliged to take the index error.

In Mr. Troughton's paper, he, in his usual clear manner, explained the adjustments and mode of using his circle. I give one more extract from it, to shew the opinion of him, allowed to be the best artist in Europe, of its value; he says—

"The greatest error, to which dividing by a good engine "is liable, may be taken at about twenty seconds; the six "readings required in a double observation on different parts "of the circumference, will probably reduce that error to "within five seconds, where the reflecting glasses and teles- "copes are good, and power considerable (about twelve) a "mean of contacts will come out within this quantity, and "where every other source of error is corrected by the prin- "ciples of the instrument, we are of opinion, that a series of "*lunar observations* will give the longitude on land, nearly, "if not quite, as accurately, as can be obtained from an occul- "tation of a star, by the moon, when observed with a powerful "telescope."

It is well known that Mr. Troughton made more and better sextants than any other artist, and of course derived much profit by their sale, yet such was his disinterested desire that his circle should come into general use, that he made the price only one guinea more than that of his best sextants, though the real difference of cost in material and workmanship is considerable. On the same terms, and with the same excellence of execution, Troughton's reflecting circles are now supplied and constructed by his worthy successor, Mr. William Simms, F.R.S., an artist whom Mr. Troughton selected as best worthy to sustain his great reputation.

The chief reason why the circle has not come into more general use *at sea*, is its greater weight than the sextant, and the partiality men feel for instruments they have been used to;

but the difference of weight is not much, and after being accustomed to it, it feels steadier in the hand than the sextant. It may indeed happen when a ship has much motion, that in *one* position of the circle, the right hand being further from the eye than it is with a sextant, a degree of inconvenience is felt, but it is soon surmounted, and is moreover balanced by the convenience of having two handles to the circle, so that the face is never held downwards, as the sextant must frequently be.

There is indeed a little longer time required to read off the three verniers than the single one of the sextant, and this may sometimes make the assisting observers of the sun and moon's altitude impatient, or less attentive. For my part, I think that lunar observations are most satisfactorily taken *without an assistant*, except one to note the watch, (and one may be dispensed with) all that is required, is to have, say, a sextant and a good quadrant. Then proceed to take one altitude of the moon, and lay the sextant down ;—that done, take one of the sun, with the *quadrant*, and lay it down ;—then take two or three sets of distances with the circle on both arcs, and then observe the altitudes of sun and moon, noting all the times.

All these things, with a little pre-arrangement, may be soon and *calmly* done, which is the chief thing, and readily reduced to the mean of times and distances ; but if two instruments are not available, the altitudes may be taken with the circle. On shore the altitudes of sun or star and moon may be taken with a well adjusted theodolite, or sextant, or the circle, and if the observer has not an assistant, the seconds of time may be conveniently noted by the beat of a metronome, but a practised observer will himself count the seconds correctly. Or if the latitude and time are correctly known, as they can be *on land*, altitudes of the sun, moon, or stars, may be calculated. In investigating longitudes on *shore*, the time should always be determined by equal altitudes of the sun or stars, which may be taken by two or three sextants with the artificial horizon, or by meridian passages of stars made with a portable transit telescope. Lithographic forms are useful, in which to fill up all the figures of calculations, and these should always be preserved.

In determining *latitudes*, the reflecting circle is most useful to the geographical surveyor and navigator. By no instrument can so many good observations be taken in so short a time, the meridian altitudes of the sun and stars, one day or night, taken by the readings of the three branches of one arc are corrected by those of the next; but by a still more rapid, and equally accurate process in one day, a sufficient number of circummeridional altitudes of the sun can be taken, and reduced to the *meridian*. During ten minutes on each side of noon, ten or twelve double altitudes may be well taken from the artificial horizon, marking the horary angles by the chronometer, and at night, many stars may in like manner be calmly and well observed. They are best selected on both sides of the zenith, and the time from noon may be extended in proportion to the slowness of the star's motion; with the *pole star* to a great extent at sea, but on land, in geodesic operations, it may be extended to half an hour on each side of the meridian. Of course, as in a lunar distance, the observations must be taken on the right and left arcs alternately, or on equal numbers before and after the meridian passage. A stand is sometimes used with the circle, but I always found I could work quicker and better without. In oblique distances a support for the elbow is desirable, but in taking altitudes, the best way is to sit on the ground, the back being supported by a Hindostanee morah, or some such thing; *this* posture gives to the hands perfect command over the instrument; also remember that when the glass roof is used over the mercury it should be reversed at each contact. Circumstances *may* prevent observations with the circle being obtained on both the arcs, in such cases the instrument may be used in the manner of a sextant, and the index error applied, with this *advantage* over the sextant, that the index error, as well as the observed angle which it is to correct, is read on three verniers instead of on one, as with the sextant; also the index error may be taken on two small stars, or other well defined objects, subtending a greater angle than the sun's diameter, and the usual painful operation of measuring it avoided altogether. With the circle also, which is called at sea

the back observation, for the altitude of the sun or a star may be taken.

To conclude, I can from long experience of its excellent properties, very confidently recommend to my brother officers of the Indian Army, the use of Troughton's reflecting circle, and also of a small theodolite, which I will describe, as it was lately constructed under the following circumstances. When I was in England, my opinion was demanded at the East India House as to the best construction of theodolites required for the revenue surveys, in the North-west provinces. I well knew the defects of the instruments hitherto supplied to the government, which were unsteady and top-heavy. I accordingly consulted Mr. Simms, and we agreed on the construction of the instrument, I will now describe.

This theodolite, though small, being only five inches in diameter, is of a stout firm make, the azimuthal circle has three verniers, and by it horizontal angles can be taken with much exactness, by taking them on both arcs, in the same manner as in the reflecting circle, each angle being from the result of six readings. When more exactness is required, several observations should of course be taken, and as a further check, the angles may be repeated on different parts of the limb, due attention being always paid to the lower, or watching telescope. The vertical angles are taken on a complete circle, which being capable of reversion has many advantages as to correct observations and means of adjustment. Altitudes and depressions are to be taken with the face of the vertical circle in one direction, it is then to be reversed in azimuth, and the operation repeated, there being room for the telescope to be turned over, as is done with astronomical circular instruments, and the vertical angles repeated. There are two levels as usual, but the correction of the line of collimation is best effected by taking the direct altitude of a stationary object, and its reflected image by depression on quicksilver. By this last mode of observing, also, a desirable degree of approximation to the latitude may be had when reflecting instruments are not at hand, or cannot be used.

A good sized magnetic compass is part of this theodolite, and can be applied above it, when required.

The instrument is mounted on a brass tripod, which may be commodiously placed on a wall, or other situation, when the usual wooden stand (which it also has) cannot be used.

This theodolite being so portable and strong, would be found most useful to the military surveyor or scientific traveller.

Mr. Simms speedily completed an extensive order for these instruments; they were sent to the India House, and I suppose to India.

Those officers who have the requisite opportunities and instruments, may also avail themselves of some other modes of determining differences of meridians.

These modes (which are noticed in the account of the survey of the Himalya Mountains, in the 14th vol. of the Asiatic Researches, page 189) consist in chronometrical observations, the sudden ignition of gunpowder at distant stations, and the observation of the horizontal angles subtended by any two or three of the well defined snowy peaks, the positions of which in latitude and longitude have been determined by the survey; these peaks, it is well known, are visible as well in the mountains as in the plains, at very great distances.

J. A. H.

Teetaghur, May, 1840.

Proceedings of the Asiatic Society.

Wednesday Evening, 1*st April,* 1840.

The Hon'ble H. T. Prinsep, Esq. Vice-President, in the chair.

The Proceedings of the last Meeting were read.

The Rev. Professor Street and Rajah Kishtonatha Raya, proposed at the last Meeting, were balloted for, and duly elected members of the Society.

Library.

Read a letter from T. H. Maddock, Esq., Secretary to the Government of India, forwarding for inspection the following works—

Illustrations of Indian Botany, No. 13.

Figures of Indian plants, No. 13 and 14. By Dr. Wight.

Read a letter from Col. J. Stuart, Secretary to the Government of India, Military Department, forwarding copy of a work containing the result of Astronomical observations at the Observatory of the Madras Presidency, during the years 1838 and 1839.

Literary and Antiquities.

Read a letter from H. Torrens, Esq. late Officiating Secretary to the Government of India, General Department, transmitting three books, being a Political and

Historical account of the British settlements in the Straits of Malacca, from the year 1785 to July 1839, by Capt. James Low.

Resolved that they be referred to the Committee of Papers.

Physical.

Read a letter from Mr. Wodehouse, Assistant Colonial Secretary at Colombo, forwarding a copy of the Tide Register kept at Trincomalee during the year 1839.

Read a letter from Lieut. Col. Hodgson, presenting a stuffed Albatross.

Skin of a Cat and and also a specimen of the glue root, were presented by Dr. H. H. Spry.

The Annual Report of the past year was then read.

Secretaries' Annual Report.

On a review of the proceedings of the Society, for the year 1839, we submit to you this Report.

Your Society has been stationary during the past year. 12 ordinary Members have been admitted, and 13 have been lost by death and departure for Europe. Those who have died, are Mr. G. A. Prinsep, Dr. Bain, Mr. W. K. Ewart, Captain J. Taylor, and Mr. C. Brownlow, an associate Member. Those who have quitted India are HisExcellency Sir H. Fane, the Hon. Col. Morrison, Mr. C. G. Mansell, Dr. G. Evans, Mr. W. Cracroft, Dr. J. Martin, Lieut. Col. Low, and Mr. D. Ross. Of your honorary Members, we regret to notice the death of two distinguished Orientalists, Baron De Sacy and M. De Tassy. The reputation of De Sacy, and his valuable labours in the field of Oriental Literature, need no eulogium. Our feeble praise could add nothing to his well deserved fame.

Publications.

We noticed in our last report the completion of the 4th vol. of the Mahabharat, and the defect of plates which rendered the Sharria Vidya, the Sanscrit Version of Hooper's Anatomy, incomplete. Fifty pounds have been remitted to England on account, and we hope that in the course of the year, we shall receive from Europe well executed plates, which will render the translation of that useful work subservient to the extension of sound Medical knowledge amongst the Hindu classical cultivators of the science.

The Sharay-ul-Islam, noticed in our last report, has been completed, and we trust this publication, which treats on the civil law of the Arabs, according to the doctrine of the juris-consults of the Shea sect, will be found to supply a want which we believe was sensibly felt.

We bring also to your notice, that Part ii. of the xix Vol. of your Physical Researches has since our last report been published.

Museum.

We here introduce the following interesting report of your Curator, in regard to this branch of your Institution.

"The donations to the Museum are communicated monthly with the proceedings of the Society. The only donation omitted in the usual place, is that of a collection of several fishes from Mr. R. J. Rose, in spirits supplied for the purpose. This little collection, consisting of ten or fifteen species, includes two or three kinds of eels, which Mr. Rose states are very destructive to the embankments so essential

to the safety of the low districts at the head of the Bay, from their habits of burrowing, a curious fact not before known, I believe, of this family.

"Our own establishment in the Museum have added considerably to our collection of fishes during the past year; and in a short time it may be hoped that we shall possess examples of most of the commoner species in Bengal. Our collection of skeletons has received three interesting additions, besides that made to it by the king of Oude, already acknowledged in the monthly proceedings, particularly that of a marsupial animal. The others are, a skeleton of a turtle, and of a gooial, the former commenced by Dr. Evans.

"Of birds, several interesting collections have been added to that of the Society during the same period, but as they have all been acknowledged in the monthly proceedings, it is unnecessary to specify them again in this place. For the safer preservation of objects in this department, the whole of the Ornithological cabinets ought to be removed before the ensuing rains, to the new room upstairs, on the west side of the house.

"Of minerals, we have received from Dr. Spry, on the part of Captain Jenkins, Agent to the Governor General, 58 specimens from Cornwall, on condition that a similar collection of Indian specimens be presented by this Society to the Royal Geological Society of Cornwall.

"The delay that has taken place in the supply of cabinets for the Society's minerals, has prevented, as yet, any return being made for this donation, in as much as our own collection must be first arranged before we can know what duplicates we have to offer in exchange, and the necessary examination of the collection cannot be made until the cabinets that have been ordered are supplied. J. M'Clelland.

7th January, 1840.

"P.S.—The number of animals set up in the Museum during the last year (1839,) is three hundred and seventy-seven (377,) including nine mammalia, two hundred and nineteen birds, and one hundred and twenty-nine fishes." J. M.

Antiquities.

We cannot report results and communications in this branch, so important as those referred to in our last. In the past year many valuable contributors have been withdrawn from their studies to the camp, to perform the active duties of their profession. But we may indulge in the hope that many, even in the busy scenes in which they have engaged, may have collected valuable materials, which future leisure may enable them to elaborate. The readers, however, of the Asiatic Journal will have observed several antique inscriptions, which may be pronounced interesting, and might have even been characterised as important, had not the exciting result of Mr. James Prinsep's researches raised our estimate of importance.

Library.

The accessions to the Library may be thus classified:—	Vols.
English, ...	43
French, ...	74
Latin, ...	8
German, ...	10
Arabic, ...	6
Sanscrit, ...	3
Hindustani, ...	3

Finances.

The useful additions, and thorough repair which your premises have received have much swelled the expenditure of the two past years. The outlay, however, has, we are happy to say, rendered the house commodious, and well adapted for the various objects you encourage. The following table shews your financial state.

[The account current will be found at the end.]

Memorandum of the Books received into the Library in 1839.
The Number of all the Books, large and small, in different Languages, on the stated subjects, amounts to 336.

English.	*Vols.*	*Pam.*	*No.*
Lardner's Cabinet Cyclopædia. Literary and Scientific Men.	1	0	0
——— ——— ——— Literary Men of France.	1	0	0
——— ——— ——— Statesmen.	2	0	0
——— ——— ——— Probabilities.	1	0	0
——— ——— ——— Biography,—English Poets.	1	0	0
——— ——— ——— History.—Denmark.	1	0	0
——— ——— ——— ——— England.	1	0	0
——— ——— ——— ——— Greece.	1	0	0
——— ——— ——— Natural History,—Geology.	1	0	0
——— ——— ——— ——— ——— Fish.	1	0	0
Transactions.	1	0	7
Reports.	1	3	1
Proceedings.	2	8	17
Journals.	6	0	4
History.	4	11	0
Naturalist's Library.			
Accounts.	1	0	0
Philosophy.	1	0	0
Mathematics.	1	0	0
Observations.	0	2	0
List of Members of Societies.	0	1	0
Maps.	1	0	0
Botany.	3	0	16
Illustrations.	1	0	9
Catalogues.	1	1	0
Treatises.	0	1	0
Voyages.	1	0	0
Memoirs.	2	0	0
Documents.	1	0	0
State Papers.	3	0	0
Analysis, (Mackenzie's Collections, by Wilson). .. .. Copies,	0	50	0
Descriptions.	1	0	0
Miscellaneous.	1	9	12
	43	32	66

Brought over.	43	32	66
French.			
Researches.	10	0	15
Reports.	0	1	0
Bulletin.	2	0	0
Natural History, ...	6	0	9
Notices.	0	1	0
Collections.	4	0	0
Grammar, (French and Armenian).	1	0	0
Miscellaneous.	51	3	0
Latin.			
State Papers.	2	2	0
Miscellaneous.	6	1	0
German.			
Periodicals.	4	0	0
Natural History.	1	0	0
Treatises.	1	0	0
Biography.	4	0	0
Miscellaneous.	0	5	0
Arabic.			
Dictionary, (Arabic and Latin).	1	0	0
Arabian Nights. .. ..Copies,	5	0	0
Sanscrit.			
Poetical Works.	1	0	0
Psalms of David.	1	0	0
The Ramayana.	1	0	0
Hindustani.			
The New Testament.	1	0	0
Miscellaneous. .. .. Copies.	2	0	0
Total, ...	147	99	90

Asiatic Society's House.
2*nd. January*, 1840.

ALEX. CSOMA,
Librarian, Asiatic Society.

Note.—For the Books received in the month of January, see Journal Asiatic Society, No. 3, new Series for March 1839.

Dr. *The Asiatic Society, 1839.* Cr.

Secretary's Office.									
To Cash paid Establishment from December 1838 to November 1839, inclusive.				968	0	0			
Ditto for Contingent charges from ditto to ditto. ...				225	7	2			
							1,193	7	2
Library.									
Paid establishment from December 1838 to November 1839.				1,982	0	0			
Contingencies from ditto to ditto.				173	14	3			
Books purchased and subscribed for.				310	0	0			
Paid for a comode and a washhand stand				87	13	0			
							2,583	11	3
Museum.									
Paid Establishment and Conveyance for the Curator from December to November. (Conveyance for the Curator for November excluded.)				1,825	12	9			
Ditto for Contingencies from ditto to ditto.				318	3	8			
Ditto for Cabinets.				158	8	0			
							2,302	8	5
Oriental Library transferred from the College of Fort William.									
Paid Establishment from December 1838 to November 1839				936	0	0			
							936	0	0
Oriental Publications.									
Paid Moonshe Munnulall for printing Sharay-ul-Islam.				866	10	6			
Ditto J. Prinsep, Esq. being the amount advanced by him towards copying the Vedas for the French Government.				37	4	3			
Ditto J. H. Stocqueler, Esq. for a bill on England for the plates of the Sharria Vidya.				500	0	0			
Ditto Annundochunder Gossame, his Salary for correcting Index of the Mahabharata.				30	0	0			
							1,433	11	9
Printing.									
Paid Mr. Ridsdale for printing Part II. Vol XX of the Asiatic Researches.				1,182	4	0			
Ditto Mr. Tassin for plates				1,038	4	0			
Ditto Mr. McClelland for ditto.				488	0	0			
							2,708	8	0
Building.									
Paid Messrs. Sheriff and Co. for repairs done by them in 1838.				222	0	0			
Ditto ditto for the building of additional Rooms in the premises.				8,100	0	0			
Ditto for new matting the Rooms				147	11	3			
							8,469	11	3
Journal.									
Paid J. Prinsep, Esq. for copies of the Journal supplied to the Society's Members, 1838.				2,118	0	0			
							2,118	0	0
Statistical Committee.									
Paid Dr. H. H. Spry, Secretary to the Statistical Committee, for establishment and charges incurred by the Committee.				86	10	0			
							86	10	0
Remittance									
Paid Messrs. Carr, Tagore, and Co. for a bill on England for 136*l.* 10*s.* on account of the busts of Sir Wm Jones and H. T. Colebrooke.				1,350	11	10			
							1,350	11	10
Tide Register.									
Paid Messrs. Fraser, McDonald, and Co. for Mr. W Scott, for expenses incurred by him for keeping up Tide Registers at Singapore.				240	3	9			
							240	3	9
Investment.									
Paid H. T. Prinsep, Esq. for purchase of the two following third five per cent Government Notes.—									
No. 1421 of 1829-30, dated 5th May 1830.	2,500	0	0						
Interest from 5th November 1838 to 6th Feb. 1839, being 3 months and 1 day.	31	15	0						
No. 1576 of ditto ditto 23d May 1830. ...	1,500	0	0						
Interest from 22d December 1838 to 6th Feb. 1839, being 1 month and 15 days.	9	6	0						
Premium on prineipal at 2 per cent. ...	88	0	0						
Sa. Rs.	1,129	5	0	4,395	7	11			
							4,395	7	11
							28,149	1	4
To Balance in the Bank of Bengal.							7,171	13	0
			Co's. Rs.				35,320	14	4

				Co's.	Rs.				
By Balance of Account Current, closed on the 31st December 1838.							7,755	1	7
,, Amount of Quarterly bills and admission fees. ...				6,821	0	0			
,, Subscriptions realized for the busts of Sir W. Jones and H. T. Colebrooke.				150	0	0			
,, Government allowance for printing Oriental works from December 1838 to 30th November 1839, inclusive, being 12 months, at 500				6,000	0	0			
Ditto ditto for the Custody of Oriental Library, transferred from the College of Fort William from ditto to ditto at 78.				936	0	0			
Ditto ditto for keeping up the existing Museum and Library of the Society from ditto to ditto at 200. ...				2,100	0	0			
Ditto the Government Agent, Interest on Government Securities deposited with him.				851	3	0			
Ditto ditto for sale of Government Securities sold by the Government Agent.				10,000	0	0			
Ditto J. W. Alexander, Esq. Assignee to the Estate of Messrs. Mackintosh and Co. being the amount of 5 dividends at 1 one per cent.				127	9	9			
Ditto from Dr. J. T. Pearson for books purchased on account of him in France from the proceeds of Oriental books sold there.				280	0	0			
							27,565	12	9

E. E.
H. T. PRINSEP, V. P.
J. C. C. SUTHERLAND,

Co's. Rs. 35,320 14 4

Day of the Month.	Moon's Phases.	Minimum Temperature observed at sun-rise. Barometer.	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Wind. Direction.	Aspect of the sky.	Maximum Pressure observed at 9 h. 50 m. Barometer.	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Wind. Direction.	Aspect of the sky.	Observations made at apparent Noon. Barometer	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Wind. Direction.	Aspect of the sky.
1		29,936	80,0	76,5	76,5	Calm.	Clear.	30,970	83,5	93,0	81,6	W. ..	Clear.	29,966	92,0	97,9	78,9	N.b W	Clear.
2	●	,904	80,5	77,0	76,8	Calm.	Misty.	,950	84,4	92,8	81,9	W. ..	Clear.	,930	88,2	99,4	82,0	W. ..	Clear.
3		,864	81,5	76,8	76,8	Calm.	Cir.-str. interspd. (a few,)	,901	84,9	94,3	81,0	S. W.	Clear.	,888	87,4	101,5	82,8	W. ..	Clear.
4		,819	81,8	75,0	75,0	Calm.	Clear.	,884	85,7	91,6	81,6	S ..	Clear.	,867	88,9	94,5	84,0	S. ..	Clear.
5		,772	82,3	78,9	77,8	Calm.	Clear.	,816	86,0	90,0	81,0	S. ..	Clear.	,793	86,5	93,7	82,9	S. ..	Clear.
6		,766	83,0	80,0	78,0	Calm.	Clear.	,808	85,5	87,8	82,8	SSW	Mists.	,795	88,6	93,0	84,2	SSW	Clear.
7		,750	82,8	79,9	78,1	S. ..	Misty.	,798	86,0	88,5	83,0	SSW high	Mists.	,786	88,5	93,9	85,2	SSW high	Light Clouds.
8		,756	82,2	80,0	79,0	S. ..	Misty.	,809	85,2	90,4	83,5	S. W.	Clear.	,792	88,4	95,0	85,2	S. ..	A few detached Clouds.
9	)	,779	82,0	78,5	78,5	S. ..	Light Mists.	,827	85,9	88,9	82,8	S. W.	Clear.	,820	88,9	94,9	85,2	S. ..	Clear.
10		,738	82,3	80,0	79,1	S. ..	Light Mists.	,796	85,8	89,5	82,8	S. ..	Clear.	,776	89,4	93,5	83,7	S. ..	Clear.
11		,712	82,8	80,0	78,5	Calm.	Cloudy.	,770	86,2	90,0	83,8	S. ..	Clear.	,746	89,5	95,4	85,5	S. ..	Clear.
12		,744	82,9	79,9	79,0	S. ..	Misty.	,801	87,2	89,5	83,0	S. ..	Clear.	,797	89,0	97,8	84,0	S. ..	Clear.
13		,750	83,0	80,0	79,1	S. ..	Cloudy.	,812	86,5	92,9	84,6	S. ..	Clear.	,802	91,0	103,0	85,0	S. W.	Clear.
14		,712	82,5	80,5	79,2	Calm.	Clear.	,774	86,3	94,8	83,9	W. ..	Clear.	,762	90,0	101,9	83,0	W. ..	Clear.
15		,718	82,3	78,0	78,9	S. ..	Cloudy.	,776	86,0	92,5	84,0	S. ..	Clear.	,762	89,5	102,0	81,0	W. ..	Clear.
16		,715	81,2	78,0	77,9	S. ..	Cloudy.	,780	86,5	90,0	83,0	S. ..	Clear.	,777	90,9	96,0	85,0	S. W.	Clear.
17	○	,749	81,8	78,9	78,5	S. ..	Generally Clear.	....	....	....	....	.....	.....	.....	....	....	....	.....	.....
18		,828	81,6	79,0	79,0	S. ..	Cloudy partially.	,892	86,4	91,0	83,0	S. ..	Cumuli detached.	,868	87,8	94,1	83,8	S. ..	A few fragments of Cumuli.
19		,872	82,4	78,0	77,5	S. E.	Generally Clear.	,908	85,5	90,5	82,8	S ..	A few detached Clouds.	,888	89,5	95,5	83,5	S. ..	Cumuli detached.
20		,811	81,8	75,5	73,2	E. ..	Cirro Cumuli interspd.,	,864	85,0	89,0	81,5	S. ..	Cumuli detached.	,852	87,5	91,5	83,0	S. ..	Cloudy,
21		,828	80,6	70,8	70,5	E. b N	Cirro-strali.	,878	82,9	82,5	77,0	E. ..	Light Cirro-strati.	,861	83,9	90,0	81,5	E. ..	To the east cir.-st.&a few cumuli
22		,831	81,2	73,0	73,0	S. ..	Light Mists.	,877	83,6	90,5	83,0	S. ..	Cumuli.	,854	86,2	92,0	82,3	S. ..	Cum.-str. & Cum. zenith clear.
23		,786	82,0	77,9	77,0	S. ..	A few detached Clouds.	,831	85,0	90,2	81,5	S. ..	Clear.	,828	88,0	94,0	83,0	S. ..	Clear.
24		,754	82,1	77,0	75,1	S. ..	Generally Clear.	,810	85,5	90,0	81,2	S. ..	Clear.	,802	89,0	95,0	87,0	S. ..	Cumuli.
25	(	,654	83,0	81,0	80,0	Calm.	Detached Clouds.	,692	85,9	90,0	83,8	S high	Cumuli floating.	,676	87,0	91,2	83,2	S.high	Detached Clouds (floating.)
26		,610	81,3	79,0	77,5	S. ..	Clear.	,691	85,8	88,5	82,0	S.high	A few detached Light Clouds.	,680	86,2	90,0	82,8	S.high	Floating Cumuli.
27		,688	81,0	77,0	75,0	Calm.	Cloudy.	,732	84,3	87,8	83,5	S. ..	Cumuli and Haze.	,720	85,5	90,6	83,6	S. ..	Cumuli.
28		,718	81,8	78,5	78,5	Calm.	Generally Clear.	,780	85,5	91,0	83,5	S. E.	Cumuli, Cloudy, occasionally.	,856	86,7	94,9	85,2	E. ..	Cum. Cloudy occasionally.
29		,708	82,5	80,0	79,0	Calm.	Cloudy.	,761	85,6	90,0	82,9	E. ..	Cloudy.	,754	85,6	90,0	82,9	E. ..	Cloudy.
30		,608	82,0	79,0	77,9	Calm.	Cloudy.	,674	84,0	86,5	81,5	E. ..	Cloudy.	,664	84,5	83,0	80,0	E. ..	Nimbi interspersed.
Mean.		29,765	81,9	78,1	77,3			,816	85,1	90,1	82,5			,802	88,1	94,7	83,4		

Day of the Month.	Maximum Temperature observed at 2 h. 40 m. Barometer.	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Therm. exposed to the rays of the sun.	Wind. Direction.	Aspect of the sky.	Miuimum Pressure, observed at 4. p. m. Barometer.	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Wind. Direction.	Aspect of the sky.	Observations made at sun-set. Barometer.	Temperature. Of the Mercury.	Of the Air.	Of an Evapg. Surface.	Wind. Direction.	Aspect of the sky.	Rain Gauge. Upper.	Lower.
1	29,890	87,5	102,9	81,9	127,0	W. ..	Clear.	29,870	87,8	100,0	82,8	W. ..	Clear.	29,876	87,3	93,0	82,4	Calm.	Clear.		
2	,810	88,2	103,5	84,1	126,5	W. ..	Clear.	,832	88,2	101,5	73,2	W. ..	Clear.	,840	87,8	94,6	82,8	Calm.	Clear.		
3	,818	88,9	103,0	85,0	124,9	S. W.	Clear.	,788	88,9	103,0	83,0	W. ..	Clear.	,790	88,0	92,5	82,0	Calm.	Clear.		
4	,816	90,0	98,2	86,8	120,0	S.....	Clear.	,788	89,5	93,0	86,8	S. ..	Clear.	,793	88,2	90,0	84,2	Calm.	To the N E. Cum. str.		
5	,729	88,5	95,9	84,9	119,3	S.....	Clear.	,696	87,2	91,8	84,0	S. ..	Clear.	,696	86,9	86,0	81,5	S.....	Clear.		
6	,742	89,3	93,2	84,8	109,0	S. ..	Clear.	,710	89,2	92,8	85,2	S. ..	Clear.	,722	87,6	87,7	83,0	S.....	Generally Clear.		
7	,746	88,8	96,8	85,0	117,0	S.....	To the N. Cum. stralus.	,718	88,9	97,0	85,9	S. ..	To the N. E. Cum. str.	,721	88,1	88,9	83,9	S.....	To the E. N. E. Cum.		
8	,738	88,3	99,0	85,9	124,3	S. W.	Cumuli detached.	,712	88,3	99,8	85,9	S. ..	Cumulo-str.	,722	88,3	89,0	82,9	S.....	Clear. [str. Hor. Hazy.		
9	,770	88,5	95,1	84,8	113,2	S. ..	To the N. Cumulo-strati.	,748	88,8	94,2	85,0	S. ..	Clear.	....	....	....	....	.....	.....		
10	,716	90,0	95,0	85,9	115,0	S. ..	Clear.	,712	90,0	93,8	85,2	S. ..	To the N. Cum. str.	,701	87,5	87,0	82,0	S.....	Clear.		
11	,676	91,5	101,0	86,6	119,0	S. ..	Generally Clear.	,663	91.7	97,9	85,9	S. ..	Clear.	,666	89,8	89,2	83,5	S.....	Horizon Hazy.		
12	,732	90,0	100,8	85,5	122,5	S. ..	Clear.	,710	89,4	99,8	84,2	S. ..	Clear.	,718	88,9	89,9	83,0	S.....	Clear.		
13	,730	92,4	107,0	81,8	136,0	S. W.	Clear.	,704	93,6	104,2	84,0	S. W.	Clear.	,702	90,1	89,9	83,0	S.....	Clear.		
14	,690	90,0	101,2	83,5	129,0	S. W.	Clear.	,665	90,1	103,5	83,9	S. W.	Clear.	,672	89,9	89,5	83,2	S. W.	Clear.		
15	,688	90,0	101,0	83,8	132,0	W. ..	Clear.	,670	91,0	103,5	83,5	W. ..	Clear.	,670	90,9	84,8	82,9	S. W.	Clear.		
16	,711	91,9	97,9	83,9	125,0	S. ..	Clear. [sunshine.)	,704	90,9	95,9	84,0	S. ..	Clear. [and Cloudy.	,708	90,0	90,3	81,8	S.....	Clear.		
17	,750	88,0	91,0	84,0	....	S. ..	Cum. detached (occasional	,720	87,6	86,0	82,0	S. ..	To the W. & N. W. hazy	,728	86,8	85,2	80,9	S. W.	Scattered Clouds.		
18	,839	88,8	95,2	84,2	117,0	S. ..	Cumuli detached.	,830	88,8	93,8	81,0	S. ..	Cumuli detached.	,832	87,0	86,8	81,9	S.....	A few Scattered clouds.		
19	,840	90,5	96,5	84,0	115,3	S. E.	Cumuli detached.	,828	90,0	94,9	81,1	S. ..	Cloudy.	,836	85,5	85,5	81,0	S. E.	Dense Clouds interspd.		
20	,780	86,9	93,8	83,0	114,8	S. E	Cum. str. & Nimbi thunder.	,761	86,9	92,9	82,9	E. ..	Cumulo-str.	,768	86,5	88,5	80,3	S.....	Scattered Clouds.		
21	,801	85,5	95,9	83,6	127,7	S. ..	Cumuli a few.	,782	86,2	92,8	81,0	E. ..	Cum. str. & Cumuli	,784	85,9	87,0	78,8	S	Clear.	0,12	0,11
22	,790	85,9	95,0	84,0	....	E.bN.	Cumulo-str. cloudy. occa-	,776	86,3	92,0	83,0	S. E.	Cum. str.—Nimbus on	,780	85,0	85,8	82,9	Calm.	Generally Clear.		
23	,784	89,0	95,3	83,0	137,0	S. ..	Cumuli a few. [sionally.	,762	88,0	95,0	83,3	S. ..	Clear. [the Zenith.	,770	87,5	90,6	80,8	S.....	A few detached Clouds to		
24	,706	88,9	95,5	84,1	128,5	S. ..	Clear.	,706	88,9	93,2	82,7	S. ..	A few detached Clouds.	,716	86,7	87,0	81,5	S.....	Cloudy. [the S. E		
25	,580	87,9	93,2	83,2	112,0	S.high	Clear.	,534	89,5	92,8	82,0	S.high	Clear.	,554	87,5	86,8	81,4	S.....	Dense Clouds threatening.		
26	,620	86,8	90,8	82,8	109,0	S.high	Detached Clouds.	,600	86,5	89,9	82,0	S.high	Lt. Haze, to the E. Cum.	,606	86,2	88,7	81,5	S.....	Generally Clear.	0,30	0,32
27	,679	88,0	94,0	83,6	116,0	S. ..	Cumuli, Cloudy occasion-	,670	88,0	91,2	83,0	S. ..	Cloudy.	,670	86.7	87,0	81,0	Calm.	Clear. [of rain.	0,31	0,31
28	,690	87,5	94,8	85,2	113,3	Calm.	Cloudy [ally.	,681	87,1	94,0	....	Calm.	Cum. Cloudy occasionally	,690	87,5	91,0	82,4	S.....	Cum. str. & a few drops		
29	,704	85,5	84,1	82,9	....	N. E.	Cloudy.	,692	84,8	84,2	80,0	N. E	Cloudy.	,692	83,8	81,8	79,0	S.....	Cloudy--Numbi lightdrizz-		
30	,606	83,2	83,0	80,0	....	E. ..	Nimby Showery.	,580	82,2	79,9	79,2	Calm.	Cloudy.	,588	82,0	79,5	78,9	S.....	Nimbi interspersed [ling.		
Mean.	,711	88,5	96,7	83,1	121,2			,721	88,1	91,8	83,5			,722	87,0	88,1	81,9			0,73	0,89